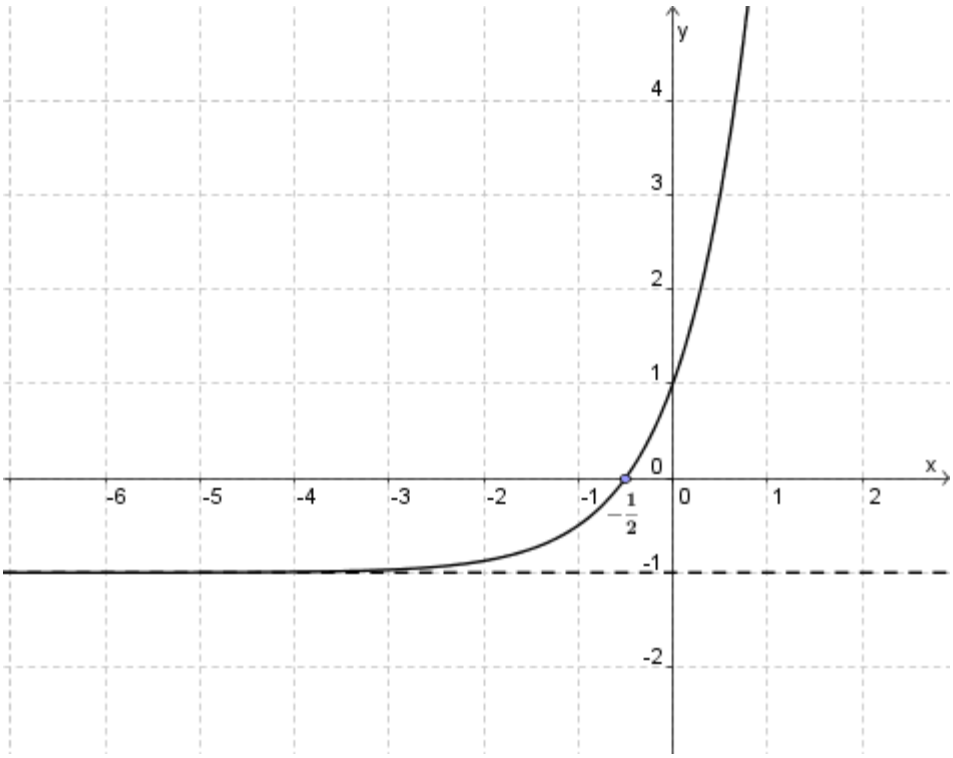
Started on	Sunday, 7 August 2022, 3:49 PM
State	Finished
Completed on	Sunday, 7 August 2022, 3:49 PM
Time taken	14 secs
Marks	0.00/1600.00
Grade	**0.00** out of 16.00 (**0**%)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text



In the figure, it is shown the graph of the function:

- (a) $y = 4 \cdot 2^x - 1$
- (b) $y = 2 \cdot 4^x - 1$
- (c) $y = 2^x - 1$
- (d) $y = 4^x - 1$
- (e) $y = 4 \cdot 4^x - 1$

Feedback

The correct answer is: $y = 2 \cdot 4^x - 1$

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

The prime factorization of the number $(2^5 - 2^3)^4 3^2$ is:

- (a) $2^{32}3^{12}$
- (b) $2^8 3^2$
- (c) $2^4 3^4$
- (d) $2^{12}3^6$
- (e) $2^4 3^2$

Feedback

The correct answer is: $2^{12}3^6$

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

The expression $\dfrac{3^{x+y}}{6^{x-y}}$ equals:

- (a) $9^y 2^{y-x}$

- (b) 18^y
- (c) 18^x
- (d) $\frac{1}{2^y}$
- (e) $\frac{1}{2^x}$

Feedback

The correct answer is: $9^y 2^{y-x}$

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Two figures are congruent if they have the same shape and size. Only one of these statements is correct, which one?

- (a) If two right-angled triangles have corresponding legs (catheti) of the same length, then they are congruent
- (b) If two triangles have corresponding angles of the same measure, then they are congruent
- (c) Two equilateral triangles are congruent
- (d) Two scalene triangles with the same area are congruent
- (e) If two isosceles triangles have the vertex angles of the same measure, then they are congruent

Feedback

The correct answer is: If two right-angled triangles have corresponding legs (catheti) of the same length, then they are congruent

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

The equation $x^6 - 7x^3 = 8$

- (a) has six real distinct solutions
- (b) can not be solved, since its degree is six
- (c) has two (and only two) real distinct solutions
- (d) has two distinct solutions and both are positive
- (e) has one (and only one) real solution

Feedback

The correct answer is: has two (and only two) real distinct solutions

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

Let b be a real parameter different from zero; the set of the solutions of the inequality $bx + 3 < 0$ is

- (a) the empty set
- (b) the half-line $x < -3/b$
- (c) the real line
- (d) the half-line $x > -3/b$
- (e) the half-line $x < -3/b$ or the half-line $x > -3/b$

Feedback

The correct answer is: the half-line $x < -3/b$ or the half-line $x > -3/b$

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

Arriving in the USA, an Italian tourist changes 5.000 euros (EUR) into dollars (USD); the exchange rate is 1 EUR = 1,4 USD. During the vacation, he spends 6.400 USD. Back in Italy, he changes the remaining USD back to EUR; the exchange rate is now 10 USD = 7,5 EUR. How much money has the tourist left?

- (a) 450 EUR
- (b) 900 EUR
- (c) 425 EUR
- (d) 475 EUR
- (e) 600 EUR

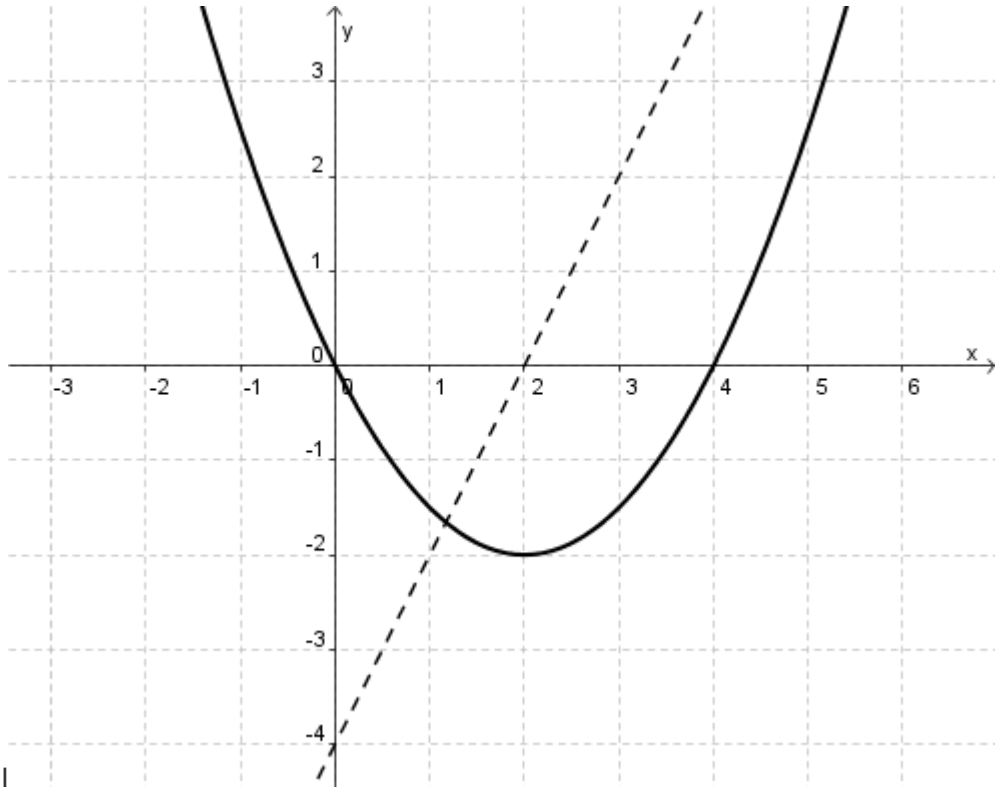
Feedback

The correct answer is: 450 EUR

Question 8
Not answered
Marked out of 100.00

Flag question

Question text



I

In the figure, a line and a parabola are shown.

They are the graphs of the functions:

- (a) $f(x) = 2x - 2, g(x) = \frac{1}{2}x(x-4)$
- (b) $f(x) = 2x - 4, g(x) = \frac{1}{2}x(x-4)$
- (c) $f(x) = x - 2, g(x) = x^2 - 4x$
- (d) $f(x) = 2x - 4, g(x) = \frac{1}{2}x^2 - 2x - 1$
- (e) $f(x) = 2x - 4, g(x) = x^2 - 4x$

Feedback

The correct answer is: $f(x) = 2x - 4, g(x) = \frac{1}{2}x(x-4)$

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

The sum of the ages of two sisters is now 45 years. In ten years' time the elder sister's age will be equal to triple her current age minus double the current age of the younger sister. How old are the two sisters?

- (a) 26 and 19 years old
- (b) 24 and 21 years old
- (c) 23 and 22 years old
- (d) 25 and 20 years old
- (e) they are twins

Feedback

The correct answer is: 25 and 20 years old

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

Claudia does not know the correct quantity of sugar she has to add to the cake she is preparing. First she weigths 200 grams; she reads again the recipe and increases the quantity by 50%. She feels that it is too much and then decreases the quantity by 50%. How much sugar will Claudia put in her cake?

- (a) 175 grams
- (b) 100 grams
- (c) 200 grams
- (d) 300 grams
- (e) 150 grams

Feedback

The correct answer is: 150 grams

Question 11
Not answered
Marked out of 100.00

Flag question

Question text

Given the two circles
$x^2 + y^2 - 2x - 4y - 4 = 0, \qquad x^2 + y^2 - 4x - 2y + 4 = 0,$
we can say that

- (a) they intersect at two distinct points
- (b) they do not intersect and the first is internal to the second
- (c) they intersect at four distinct points
- (d) they do not intersect and the second is internal to the first
- (e) they are tangent (one point of intersection)

Feedback

The correct answer is: they do not intersect and the second is internal to the first

Question 12
Not answered
Marked out of 100.00

Flag question

Question text

The least common multiple of the monomials a^3x, $5b^2x^2y$, $20a^2bx^3y^2$ is:

- (a) $20a^2x^2yb^2$
- (b) $20a^3xb^2y$
- (c) $20a^3x^3y^2b^2$
- (d) a^3x^3
- (e) $abxy$

Feedback

The correct answer is: $20a^3x^3y^2b^2$

Question 13
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following equations is the equation of the line that passes through the point $(-2, 3)$ and is perpendicular to the line $y = x$?

- (a) $2x + 2y - 2 = 0$
- (b) $x + y + 1 = 0$
- (c) $4x + 5y = 0$
- (d) $x - 2y + 8 = 0$
- (e) $x - 8y - 6 = 0$

Feedback

The correct answer is: $2x + 2y - 2 = 0$

Question 14
Not answered
Marked out of 100.00

Flag question

Question text

Let a and b be two real numbers different from each other. Simplifying the expression $\left(1-\frac{b}{a+b}\right)\left(1+\frac{b}{a-b}\right)\left(1-\frac{b^2}{a^2}\right)$, we get:

- (a) 1
- (b) $a(a-b)$
- (c) $\frac{a-b}{a+b}$
- (d) $a-b$
- (e) $\frac{1}{a}$

Feedback

The correct answer is: 1

Question 15
Not answered
Marked out of 100.00

Flag question

Question text

The equation $\log_5(x+3)^2=2$

- (a) has two solutions: $x=2$ and $x=-8$
- (b) has one (and only one) solution: $x=2$
- (c) has one (and only one) solution: $x=-2$
- (d) has no real solutions
- (e) has one (and only one) solution: $x=1-\log_5 3$

Feedback

The correct answer is: has two solutions: $x=2$ and $x=-8$

Question 16
Not answered
Marked out of 100.00

Flag question

Question text

In the three-dimensional space, consider a point Q and a plane α, whose distance from Q equals 4. The intersection of the plane α and the sphere centred at Q and having radius 3 is:

- (a) a circle
- (b) a point
- (c) a parabola
- (d) an ellipse with different axes
- (e) the empty set

Feedback

The correct answer is: the empty set

Started on	Sunday, 7 August 2022, 3:51 PM
State	Finished
Completed on	Sunday, 7 August 2022, 3:51 PM
Time taken	22 secs
Marks	0.00/1600.00
Grade	**0.00** out of 16.00 (**0**%)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

The expression $\frac{2^{x-y}}{6^{x+y}}$ equals:

- (a) 12^{-x}
- (b) $\frac{1}{3^x}$
- (c) 12^{-y}
- (d) $3^{-x-y}4^{-y}$
- (e) $\frac{1}{3^{2x}}$

Feedback

The correct answer is: $3^{-x-y}4^{-y}$

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

The prime factorization of the number $(5^4 - 5^2)^2 3^2$ is:

(a) $2^4 3^2 5^4$
(b) $2^6 3^4 5^2$
(c) $2^3 3^3 5^4$
(d) $2^6 3^2 5^4$
(e) $2^6 3^4 5^4$

Feedback

The correct answer is: $2^6 3^4 5^4$

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

Consider the inequalities

$$A)\ P(x) > 0, \qquad B)\ \frac{P(x)}{x^2+1} > 0, \qquad C)\ \frac{P(x)}{x^2-1} > 0,$$

where $P(x)$ is a second degree polynomial. Which of the following statements is true?

(a) nothing can be said, since we do not know the polynomial $P(x)$
(b) the inequalities B) and C) have the same set of solutions
(c) the inequalities A) and C) have the same set of solutions
(d) the three inequalities have the same set of solutions
(e) the inequalities A) and B) have the same set of solutions

Feedback

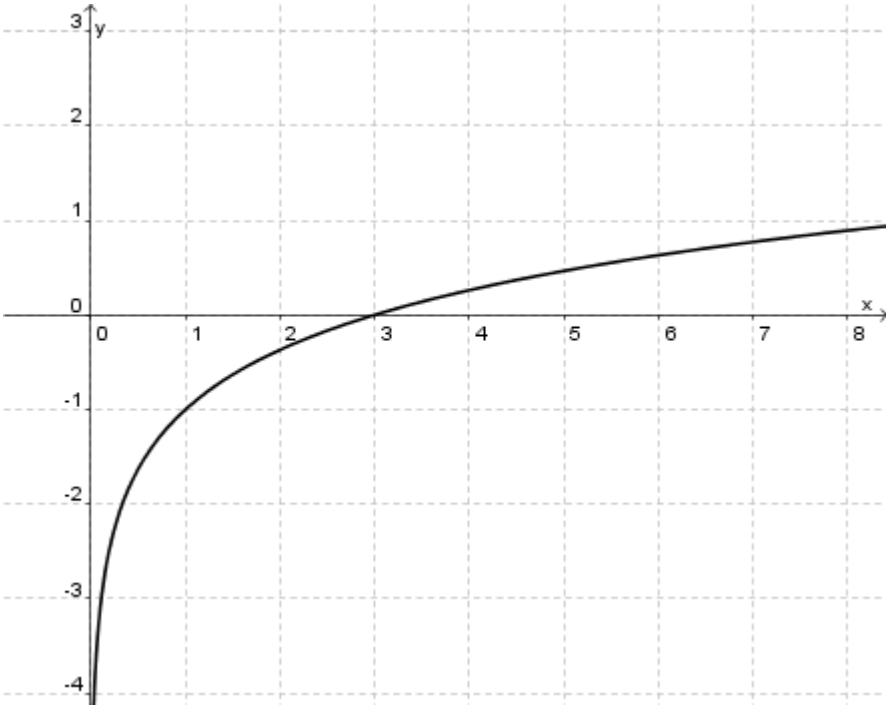
The correct answer is: the inequalities A) and B) have the same set of solutions

Question 4
Not answered

Marked out of 100.00

Flag question

Question text



In the figure, it is shown the graph of the function:

- (a) $y = -1 - \log_3 x$
- (b) $y = -\log_3 x$
- (c) $y = 1 - \log_3 x$
- (d) $y = -1 + \log_9 x$
- (e) $y = -1 + \log_3 x$

Feedback

The correct answer is: $y = -1 + \log_3 x$

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

The real number $\sqrt{75}+3\sqrt{18}-2\sqrt{12}-2\sqrt{50}$ equals

- (a) $\sqrt{3}+\sqrt{2}$
- (b) $\sqrt{2}-\sqrt{3}$
- (c) $9\sqrt{3}+19\sqrt{2}$
- (d) $2\sqrt{6}$
- (e) $\sqrt{3}-\sqrt{2}$

Feedback

The correct answer is: $\sqrt{3}-\sqrt{2}$

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

Given the two circles
$x^2+y^2+2x-2y+1=0, \qquad x^2+y^2+6x-2y+9=0,$
we can say that

- (a) they intersect at four distinct points
- (b) they do not intersect and the second is internal to the first
- (c) they do not intersect and the first is internal to the second
- (d) they intersect at two distinct points
- (e) they are tangent (one point of intersection)

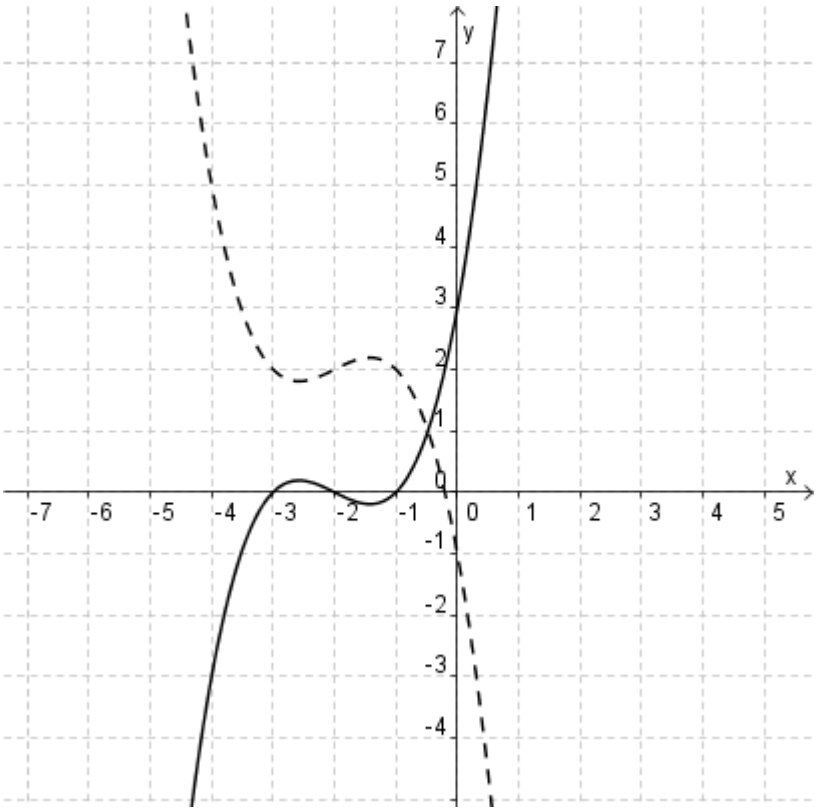
Feedback

The correct answer is: they are tangent (one point of intersection)

Question 7
Not answered
Marked out of 100.00

Flag question

Question text



In the figure, the continuous curve is the graph of the function $y = f(x)$.

The dashed curve is the graph of the function $y = g(x)$, where:

- (a) $g(x) = 2 - f(x)$
- (b) $g(x) = -f(x)$
- (c) $g(x) = -2 - f(x)$
- (d) $g(x) = -f(x+2)$
- (e) $g(x) = -2f(x)$

Feedback

The correct answer is: $g(x) = 2 - f(x)$

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

Only one of these statements is correct, which one?

- (a) Two parallelograms with the same area are similar
- (b) Two right-angled triangles with proportional legs (catheti) are similar
- (c) Two isosceles triangles with the same height are similar
- (d) Two rectangles with the same perimeter are similar
- (e) Two scalene triangles with the same area are similar

Feedback

The correct answer is: Two right-angled triangles with proportional legs (catheti) are similar

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

The equation $(x^4 - 2x^2 + 7)(x^2 - 13) = 0$

- (a) has, at least, two solutions of the same sign
- (b) has only negative solutions
- (c) has no real solutions
- (d) has two (and only two) real solutions
- (e) has six real solutions

Feedback

The correct answer is: has two (and only two) real solutions

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

The least common multiple of the monomials $8x^3y^6, 6x^2y^6z^2, x^4y^3$ is:

(a) x^2z^2
(b) $24x^4y^6z^2$
(c) $24x^4y^3$
(d) $24x^2y^3z$
(e) x^3y^3

Feedback

The correct answer is: $24x^4y^6z^2$

Question 11
Not answered
Marked out of 100.00

Flag question

Question text

The quantity $\cos^2\frac{9\pi}{8} - \sin^2\frac{9\pi}{8}$ equals:

(a) $\left(\frac{\sqrt{2}}{2}\right)^2$
(b) 1
(c) $\frac{\sqrt{3}}{2}$
(d) $\cos\frac{9\pi}{16}$
(e) $\frac{\sqrt{2}}{2}$

Feedback

The correct answer is: $\frac{\sqrt{2}}{2}$

Question 12
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following equations represents a line parallel to the line passing through the points $(0, 1)$ and $(3, 2)$?

(a) $x - 4y - 2 = 0$
(b) $3x - 6y + 3 = 0$
(c) $2x - 6y + 3 = 0$
(d) $x + 2y - 4 = 0$
(e) $4x + 6y = 0$

Feedback

The correct answer is: $2x - 6y + 3 = 0$

Question 13
Not answered
Marked out of 100.00

Flag question

Question text

In the three-dimensional space, consider two spheres of radius 1 and centred, respectively, at the points P_1 and P_2. If the distance between P_1 and P_2 is 3, then the intersection of the two spheres is:

(a) a circle
(b) a point
(c) the empty set
(d) a hyperbola

(e) an ellipse with different axes

Feedback

The correct answer is: the empty set

Question 14
Not answered
Marked out of 100.00

Flag question

Question text

Let x and y be two real numbers different from zero. Simplifying the expression $2xy\left(-\frac{1}{4}x^2y\right)+(2x^2y)^3:(8x^3y)$, we get:

(a) $\frac{3}{2}x^2y^3$

(b) $\frac{1}{2}x^2y^3$

(c) $\frac{1}{2}x^3y^2$

(d) $2xy$

(e) $-\frac{3}{2}x^3y^2$

Feedback

The correct answer is: $\frac{1}{2}x^3y^2$

Question 15
Not answered
Marked out of 100.00

Flag question

Question text

A man has two children, Aldo and Maria. The sum of the ages of the man and Aldo is 80 years more than Maria's age. The sum of the ages of the man and Maria is 90 years more than Aldo's age. How old is the man?

- (a) 68 years old
- (b) 45 years old
- (c) 85 years old
- (d) 54
- (e) 70 years old

Feedback

The correct answer is: 85 years old

Question 16
Not answered
Marked out of 100.00

Flag question

Question text

Arriving in the USA, an Italian tourist changes 10.000 euros (EUR) into dollars (USD); the exchange rate is 1 EUR = 1,4 USD. During the vacation, he spends 12.800 USD. Back in Italy, he changes the remaining USD back to EUR; the exchange rate is now 10 USD = 7,5 EUR. How much money has the tourist left?

- (a) 850 EUR
- (b) 950 EUR
- (c) 1.200 EUR
- (d) 900 EUR
- (e) 1.800 EUR

Feedback

The correct answer is: 900 EUR

Started on	Sunday, 7 August 2022, 3:53 PM
State	Finished
Completed on	Sunday, 7 August 2022, 3:53 PM
Time taken	26 secs
Marks	0.00/1600.00
Grade	**0.00** out of 16.00 (**0**%)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

Let x be a positive real number. The real number $\dfrac{\sqrt{\sqrt{(2x+3)^3}}}{\sqrt[6]{(2x+3)}}$ equals

- (a) $\sqrt[6]{(2x+3)^2}$
- (b) $\sqrt[12]{(2x+3)^7}$
- (c) $\sqrt{(2x+3)}$
- (d) $\sqrt[7]{(2x+3)^{12}}$
- (e) $\sqrt[24]{(2x+3)^3}$

Feedback

The correct answer is: $\sqrt[12]{(2x+3)^7}$

Question 2
Not answered

Marked out of 100.00

Flag question

Question text

Which of the following equations is the equation of the line that passes through the point $(1, -2)$ and is perpendicular to the line $y = x$?

(a) $3x + 3y + 3 = 0$
(b) $x - y - 3 = 0$
(c) $x + y - 1 = 0$
(d) $4x + 3y = 0$
(e) $x - 7y - 15 = 0$

Feedback

The correct answer is: $3x + 3y + 3 = 0$

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

In a restaurant there are 24 square tables with 4 seats each. They can be used separately, or they can be joined in order to have a 6 seat table. If the waiter prepares the same number of 4 seat tables and 6 seat tables, how many customers he can seat?

(a) 92
(b) 72
(c) 76
(d) 80
(e) 84

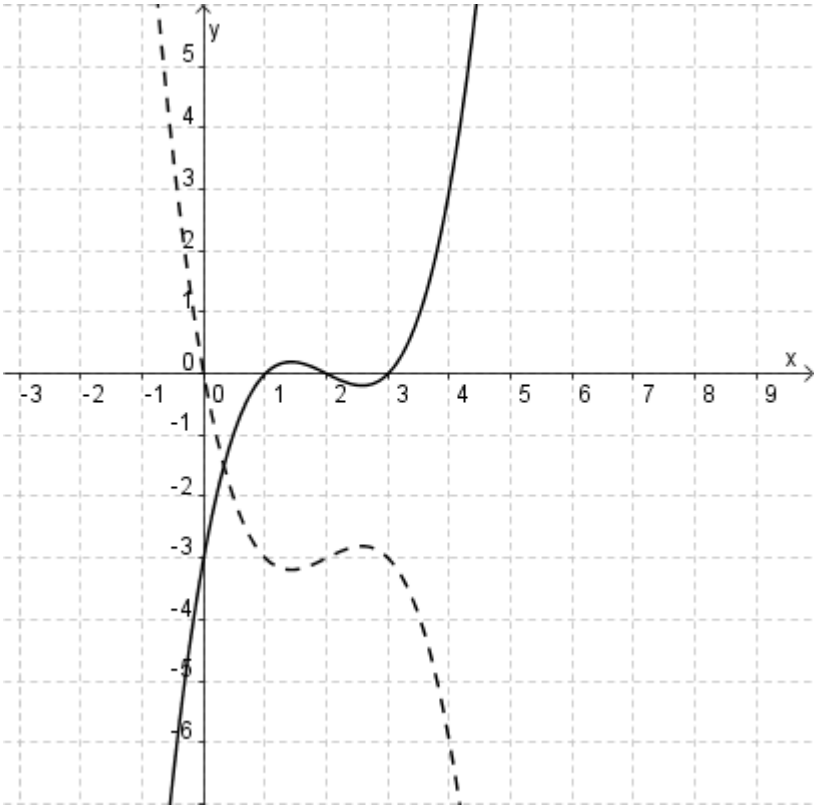
Feedback

The correct answer is: 80

Question 4
Not answered
Marked out of 100.00

Flag question

Question text



In the figure, the continuous curve is the graph of the function $y = f(x)$.

The dashed curve is the graph of the function $y = g(x)$, where:

- (a) $g(x) = 3 - f(x)$
- (b) $g(x) = -f(x)$
- (c) $g(x) = -f(x-3)$
- (d) $g(x) = -3f(x)$
- (e) $g(x) = -f(x) - 3$

Feedback

The correct answer is: $g(x) = -f(x) - 3$

Question 5
Not answered

Marked out of 100.00

Flag question

Question text

The prime factorization of the number $(5^4 - 5^2)^2 3^2$ is:

(a) $2^3 3^3 5^4$
(b) $2^6 3^4 5^2$
(c) $2^6 3^4 5^4$
(d) $2^4 3^2 5^4$
(e) $2^6 3^2 5^4$

Feedback

The correct answer is: $2^6 3^4 5^4$

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

Which of the following numbers is a solution of the equation $\log_3(2 + x)^2 = 6$?

(a) $x = \log_3 2$
(b) $x = 1$
(c) $x = 3^{3 - \log_3 2}$
(d) $x = -29$
(e) $x = \log_2 3$

Feedback

The correct answer is: $x = -29$

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

Let x be a real number, different from zero. Simplifying the expression $(1-3x)(4x^3+12x^4)-4x^3$, we get:

- (a) $-12x^2$
- (b) $12x^2$
- (c) $-36x^5$
- (d) $36x^5$
- (e) x^5

Feedback

The correct answer is: $-36x^5$

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

The equation $x^6+4x^3=12$

- (a) ha two distinct solutions and both are negative
- (b) has one (and only one) real solution
- (c) has six real distinct solutions
- (d) has two (and only two) real distinct solutions
- (e) can not be solved, since its degree is six

Feedback

The correct answer is: has two (and only two) real distinct solutions

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

The age of a boy is now a quarter of the age of his father. In 20 years' time the sum of their ages will be 100 years. How old is the boy now?

- (a) 12 years old
- (b) 16 years old
- (c) 14 years old
- (d) 13 years old
- (e) 15 years old

Feedback

The correct answer is: 12 years old

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

Consider the inequalities

$$A)\ Q(x) > 0, \qquad B)\ \frac{Q(x)}{x^2-3} > 0, \qquad C)\ \frac{Q(x)}{x^2+3} > 0,$$

where $Q(x)$ is a second degree polynomial. Which of the following statements is true?

- (a) the inequalities A) and C) have the same set of solutions
- (b) the three inequalities have the same set of solutions
- (c) the inequalities A) and B) have the same set of solutions
- (d) nothing can be said, since we do not know the polynomial $Q(x)$
- (e) the inequalities B) and C) have the same set of solutions

Feedback

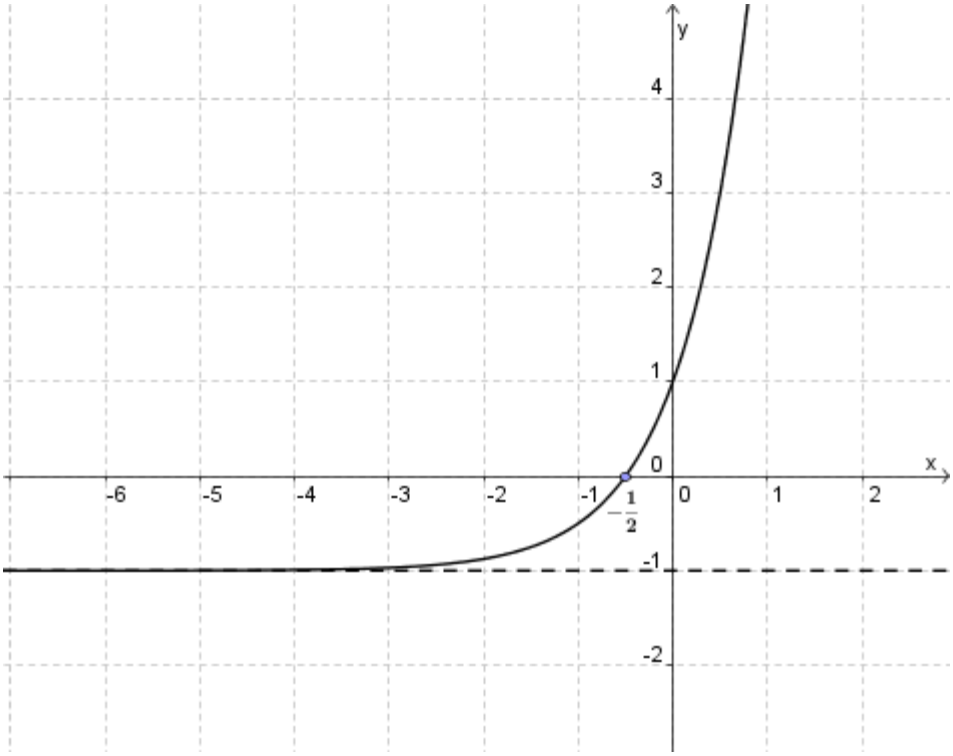
The correct answer is: the inequalities A) and C) have the same set of solutions

Question 11
Not answered

Marked out of 100.00

Flag question

Question text



In the figure, it is shown the graph of the function:

- (a) $y = 4^x - 1$
- (b) $y = 2^x - 1$
- (c) $y = 2 \cdot 4^x - 1$
- (d) $y = 4 \cdot 2^x - 1$
- (e) $y = 4 \cdot 4^x - 1$

Feedback

The correct answer is: $y = 2 \cdot 4^x - 1$

Question 12
Not answered
Marked out of 100.00

Flag question

Question text

The expression $\log_7 2^{(x^3)}$ equals:

(a) $x^3 \log_7 2$ only for $x > 0$

(b) $x^3 \log_2 7$ for all real x

(c) $x^3 \log_7 2$ for all real x

(d) $(\log_7 2^x)^3$ for all real x

(e) $3 \log_7 2^x$ for all real x

Feedback

The correct answer is: $x^3 \log_7 2$ for all real x

Question 13
Not answered
Marked out of 100.00

Flag question

Question text

Two figures are congruent if they have the same shape and size. Only one of these statements is correct, which one?

(a) Two isosceles triangles with the same perimeter are congruent

(b) Two rectangles with the same perimeter are congruent

(c) Two parallelograms with the same area are congruent

(d) If in two triangles the corresponding angles have the same measure, then the two triangles are congruent

(e) Two right-angled triangles have the hypotenuse of the same length; if, in addition, the corresponding acute angles are equal then the triangles are congruent

Feedback

The correct answer is: Two right-angled triangles have the hypotenuse of the same length; if, in addition, the corresponding acute angles are equal then the triangles are congruent

Question 14

Not answered
Marked out of 100.00

Flag question

Question text

In the three-dimensional space, consider a cube Q and a plane p passing through 4 vertices of the cube that do not belong to the same face. If the measure of the edge of the cube is 4, then the intersection between the cube and the plane is:

- (a) a square whose sides have length 4
- (b) a rectangle whose perimeter is $8(1+\sqrt{2})$
- (c) a square whose sides have length $\sqrt{32}$
- (d) a rhombus (not a square)
- (e) a segment that has length 4

Feedback

The correct answer is: a rectangle whose perimeter is $8(1+\sqrt{2})$

Question 15
Not answered
Marked out of 100.00

Flag question

Question text

The quantity $2\sin\frac{\pi}{12}\cos\frac{\pi}{12}$ equals:

- (a) $\sin\frac{\pi}{24}$
- (b) $1/2$
- (c) $\sqrt{3}/2$
- (d) 2
- (e) $-1/2$

Feedback

The correct answer is: $1/2$

Question 16
Not answered
Marked out of 100.00

Flag question

Question text

Given the two circles
$x^2 + y^2 + 2x - 2y + 1 = 0, \qquad x^2 + y^2 + 6x - 2y + 9 = 0,$
we can say that

- (a) they intersect at two distinct points
- (b) they intersect at four distinct points
- (c) they are tangent (one point of intersection)
- (d) they do not intersect and the first is internal to the second
- (e) they do not intersect and the second is internal to the first

Feedback

The correct answer is: they are tangent (one point of intersection)

Advantages of public transport

A new study conducted for the World Bank by Murdoch University's Institute for Science and Technology Policy (ISTP) has demonstrated that public transport is more efficient than cars. The study compared the proportion of money poured into transport by thirty-seven cities around the world. This included both the public and private costs of building, maintaining and using a transport system.

The study found that the Western Australian city of Perth is a good example of a city with minimal public transport. As a result, 17% of its wealth went into transport costs. Some European and Asian cities, on the other hand, spent as little as 5%. As a consequence, these more efficient cities were able to put the money saved into attracting industry and jobs or creating a better place to live.

Professor Newman, ISTP Director describes Melbourne as two cities: "A European city surrounded by a car-dependent one". Melbourne's large tram network has greatly reduced car use in the inner city, but the outer suburbs have the same car-based structure as most other Australian cities. The increasing demand for accommodation in the inner suburbs of Melbourne suggests that people now prefer to live there.

Newman believes there is a new, more general way of considering public transport issues. In the past, environmental and social justice were considered before economics. Newman, however, thinks the study demonstrates that "the auto-dependent city model is inefficient and very inadequate in both economic and environmental terms".

Supporters of the road networks often reject the models of cities with good public transport by saying that these systems would not work in their particular city. One objection is climate. Some people say their city could not make more use of public transport because it is either too hot or too cold. Newman rejects this, pointing out that public transport has been successful in both Toronto and Singapore and, in fact, checks have demonstrated no correlation between the use of cars and the climate.

When it comes to other physical characteristics, road lobbies are in a stronger position. For example, Newman accepts it would be hard for a city with a lot of hills like Auckland to develop a really good rail network. However, he points out that both Hong Kong and Zurich have managed to make a success of their rail systems, even if they have more hills than most cities in the world.

In fact, Newman believes the main reason for choosing one sort of transport instead of another is politics: "the more democratic the process, the more public transport is favored". He considers Portland, Oregon, a perfect example of this. Some years ago, the central government decided to finance the construction of a new road. However, local pressure groups called for a referendum and the money was spent on a railway instead, which worked extremely well. In the years that have followed, more and more rail systems have been put in, dramatically changing the nature of the city.

In the UK, travel times to work had been stable for at least six centuries, and people generally avoided spending more than half an hour travelling to work. Trains and cars initially allowed people to live at greater distances without taking longer to reach their destination. However, public infrastructure did not grow with the increase in urban areas, and this caused enormous congestion problems and much longer commuting times.

Many think that if people have more money they want to live further from the city centre where cars are the only practical means of transport. The example of European cities contradicts that. People are often wealthier than their American counterparts but do not use their cars as much. In Stockholm, car use has actually fallen in recent years as the city has become larger and wealthier. New studies show that developing cities in Asia, such as Jakarta and Bangkok, make more use of the car than wealthy Asian cities such as Tokyo and Singapore. In cities that developed later, the World bank and Asian Development Bank discouraged the building of public transport and people have been forced to depend on cars -- creating the massive traffic jams that characterize those cities.

An alternative proposal is to convert cities that have been built for cars to rail use, by creating urban villages at hundreds of sites, mostly around railway stations.

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

The use of private transport

- (A) has increased recently in Stockholm
- (B) has caused enormous traffic problems in Singapore
- (C) has created hundreds of urban villages
- (D) was supported in some Asian cities by banks
- (E) is more common among rich Europeans

Feedback

The correct answer is: was supported in some Asian cities by banks

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

In the study Melbourne emerges as

- (A) a city where people use two opposing modes of transport
- (B) a city with a growing demand for car parks

- (C) a city with an efficient outer suburban tram system
- (D) a European city
- (E) a place where people prefer to live

Feedback

The correct answer is: a city where people use two opposing modes of transport

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

The ISTP report showed that cities with well-developed public transport

- (A) were a good example to other cities
- (B) offered people better jobs
- (C) spent less money on transport
- (D) spent more money on transport
- (E) were less well-organized

Feedback

The correct answer is: spent less money on transport

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Some people who prefer travelling by car do not agree with an increase in public transport because

- (A) it is bad for the environment
- (B) it didn't work in Toronto and Singapore
- (C) it didn't work in Hong Kong and Zurich
- (D) it is not compatible with typical weather conditions
- (E) there aren't enough hills in their cities

Feedback

The correct answer is: it is not compatible with typical weather conditions

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

In the case of Portland, the most significant aspect governing the choice of trains was

- (A) the demands of the inhabitants
- (B) financial issues
- (C) the building of more roads
- (D) dramatic changes in the city
- (E) government decisions

Feedback

The correct answer is: the demands of the inhabitants

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

How can you insert the + (plus) or the - (minus) sign in the following sequence of numbers :

$10 \quad 11 \quad 12 \quad 13 \quad 14$

in order to have $+10$ as a result?

(Example: if I insert $+ \quad -$ in the sequence $5 \quad 6 \quad 7$ the result is $5 + 6 - 7 = +4$, if I insert $- \quad +$ the result is $5 - 6 + 7 = +6$)

- (a) $- \quad - \quad + \quad +$
- (b) $- \quad - \quad - \quad +$
- (c) $+ \quad + \quad - \quad -$

(d) − + + −

(e) − + − +

Feedback

The correct answer is: − + + −

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

Anna, Bruno, Carlo and Daniela are considering whether to go to Cortina next weekend.
We know that:
- if Carlo goes, Daniela will also go
- if Anna doesn't go, Daniela won't go either
- if Anna goes, Bruno will also go
Which of the following statements can be deduced?

(a) They'll all go

(b) If Anna goes, Carlo will also go

(c) If Bruno doesn't go, Carlo won't go either

(d) Nobody will go

(e) Anna and Bruno will go

Feedback

The correct answer is: If Bruno doesn't go, Carlo won't go either

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

At a tango competition the 200 dancers wear a waistcoat and/or a rhinestone jacket. 114 dancers wear a waistcoat, 156 wear a rhinestone jacket. How many dancers only wear a waistcoat?

(a) 114

(b) 44

- (c) 72
- (d) 86
- (e) 42

Feedback

The correct answer is: 44

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

Discussing their personal finances, four friends (Alisher, Bahodir, Elmurod e Rashid) state that:

- Alisher has less money than Elmurod
- Bahodir has less money than Elmurod
- Elmurod has more money than Rashid
- Bahodir has more money than Alisher

Then, which of the following statements is NOT NECESSARILY correct?

- (a) Bahodir is not the poorest
- (b) Alisher is the poorest among the friends
- (c) the richest among the friends is Elmurod
- (d) the alphabetical order of the names is not the same as the (increasing order) of the money owned
- (e) Rashid has less money than Elmurod

Feedback

The correct answer is: Alisher is the poorest among the friends

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

As it is true that:
- all sparrows are birds

- all sparrows are small
- all birds are animals
- some animals don't eat leaves

it can be deduced that:

- (a) At least one species of bird doesn't eat leaves
- (b) All sparrows are small animals
- (c) All small animals are sparrows
- (d) Some small birds eat leaves
- (e) Some sparrows don't eat leaves

Feedback

The correct answer is: All sparrows are small animals

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

The integer numbers a, b, c, d and e satisfy the relations:

$$b = a - 1$$

$$c = b + 2$$

$$c = d + 4$$

$$d = e - 2$$

One of the following statements is true; which one?

- (a) the order of the numbers is the same as the alphabetical order ($a < b < c < d < e$)
- (b) $a < c < b$
- (c) $e = b$
- (d) $e > b$
- (e) $d > a$

Feedback

The correct answer is: $e = b$

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

The product of 20 integer numbers is positive. From this information we can deduce that it is necessarily true that:

- (a) all factors are positive
- (b) at least two factors are negative
- (c) the number of positive factors is either zero or an even number
- (d) 2 factors are positive and 18 factors are negative
- (e) 10 factors are positive and 10 factors are negative

Feedback

The correct answer is: the number of positive factors is either zero or an even number

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

Five books, identified by the abbreviations An-Bo-Ch-Di-El, are in a pile in descending alphabetical order (so book An is at the top and book El is at the bottom).
The last three books from the bottom are simultaneously removed and put at the top, maintaining their vertical order.
If this procedure is repeated two more times, which book will end up precisely at the bottom of the pile?

- (a) Book Di
- (b) Book Bo
- (c) Book El
- (d) Book An
- (e) Book Ch

Feedback

The correct answer is: Book An

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

If it is true that:
- some cars are fast
- some cars are red
- there are fast cars that aren't red
then it is certain that:

(a) fast cars are red

(b) some fast cars are a different colour from red

(c) there can't be a car that isn't red and isn't fast

(d) if every red car is fast, then every fast car is red

(e) all fast cars aren't red

Feedback

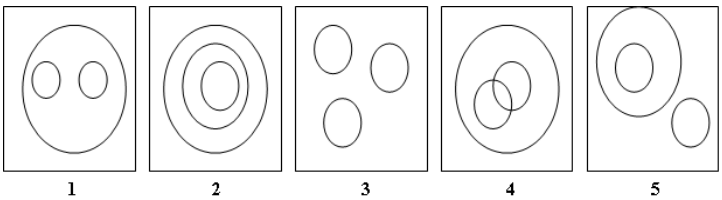
The correct answer is: some fast cars are a different colour from red

Question 10
Not answered
Marked out of 100.00

Flag question

Question text

Which of these diagrams illustrates the relationship between:
EVEN NUMBERS - INTEGERS - PRIME NUMBERS?



- (a) Figure 3
- (b) Figure 4
- (c) Figure 1
- (d) Figure 5
- (e) Figure 2

Feedback

The correct answer is: Figure 4

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

On an object two forces $\vec{F}_1$ and $\vec{F}_2$ are applied, with moduli $F_1 = 5\text{N}$ and $F_2 = 2\text{N}$, forming an angle $\theta = 60^\circ$. What is the modulus of the resultant force F_T ?

- (A) There is not enough data to give an answer
- (B) Approximately 5.5 N
- (C) 7 N
- (D) Little more than 6 N
- (E) 30 N

Feedback

The correct answer is: Little more than 6 N

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

Consider two blocks of the same material, one of mass 5kg, the other of mass 10kg. Initially, the two blocks have equal temperature 300K. Suppose that they are then both heated to a temperature of 500K. One can assert that

- (A) The heat absorbed depends on the geometrical shape of the two blocks
- (B) The 10kg block has absorbed more heat
- (C) Both blocks have absorbed the same amount of heat because they are made of the same material
- (D) Both blocks have absorbed the same quantity of heat because the increase in temperature has been the same
- (E) The 5kg block has absorbed more heat

Feedback

The correct answer is: The 10kg block has absorbed more heat

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

In the electric field, which one of the following relations concernig "volt" unit of measure is correct?

- (a) 1 volt = 1 farad/coulomb
- (b) 1 volt = 1 coulomb·farad
- (c) 1 volt = 1 οημ·ampere
- (d) 1 volt = 1 ampere/οημ
- (e) 1 volt = 1 οημ/ampere

Feedback

Risposta errata.

The correct answer is: 1 volt = 1 οημ·ampere

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Consider two distinct equipotential surfaces in an electrostatic field (meaning that points of the same surface have the same potential, but that the two values of the potential are different). The two surfaces

- (A) always intersect at 90°
- (B) are always parallel
- (C) are parallel to the lines of force of the field
- (D) have the same centres of curvature
- (E) never intersect each other

Feedback

The correct answer is: never intersect each other

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

A current of 10A passes through a resistor, across which the voltage is 220V. The power dissipated is

- (A) 0,045 A/V
- (B) 22 V/A
- (C) 2,2 kWh
- (D) 2,2 kJ
- (E) 2,2 kW

Feedback

The correct answer is: 2,2 kW

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

An object, initially at rest, falls vertically under gravity from a height of 5 m. The time it takes to fall (ignoring air resistance) is roughly:

- (A) 1/5 second
- (B) two seconds
- (C) one second
- (D) 5 seconds
- (E) half a second

Feedback

The correct answer is: one second

Question 7
Not answered
Marked out of 100.00

Flag question

Question text

A car, initially at rest, moves along a line with constant acceleration equal to $10 m/s^2$. What will be the velocity of the car after 45m?

- (a) 30m/s
- (b) 20m/s
- (c) 5m/s
- (d) 50m/s
- (e) 40m/s

Feedback

Risposta errata.

The correct answer is: 30m/s

Question 8
Not answered
Marked out of 100.00

Flag question

Question text

In a science fiction film, there is a scene on the Lunar surface in which an astronaut becomes aware of the arrival of a spaceship by hearing the noise of its engines. This scene is physically inconsistent because:

(A) the temperature of the Moon is so high that the sound cannot propagate

(B) The astronaut's space-suit, like all clothing, completely absorbs sound

(C) the acceleration due to gravity is smaller on the Moon compared to the Earth

(D) the laws of physics do not hold on the Moon

(E) The moon has no atmosphere and the sound cannot propagate in the absence of a suitable medium

Feedback

The correct answer is: The moon has no atmosphere and the sound cannot propagate in the absence of a suitable medium

Question 9
Not answered
Marked out of 100.00

Flag question

Question text

Two capacitors have capacitances C_1, C_2 (with $C_1 > C_2$) and charges whose respective absolute values are Q_1, Q_2. One can deduce that

(A) $Q_1 > Q_2$ if the capacitors are connected in series

(B) $Q_1 > Q_2$ if the capacitors are connected in parallel

(C) $Q_1 = Q_2$ if the capacitors are connected in parallel

(D) Q_1 is always greater than Q_2

(E) Q_1 depends on the form of the plates

Feedback

The correct answer is: $Q_1 > Q_2$ if the capacitors are connected in parallel

Question 10

Not answered
Marked out of 100.00

Flag question

Question text

Two canisters hold equals volumes of gas held at the same temperature and pressure. One contains H_2 (molecular mass equal to 2) and the other N_2 (molecular mass equal to 28).

(A) The molecules of N_2 and those of H_2 have the same speed v

(B) The quantity in grams of the two gases is equal

(C) The molecules of N_2 and those of H_2 have the same kinetic energy

(D) The number of N_2 molecules is 14 times that of the H_2

(E) The number of moles of N_2 is 14 times that of the H_2

Feedback

The correct answer is: The molecules of N_2 and those of H_2 have the same kinetic energy

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Started on	Sunday, 7 August 2022, 4:10 PM
State	Finished
Completed on	Sunday, 7 August 2022, 4:10 PM
Time taken	11 secs
Grade	**0.00** out of 600.00 (**0**%)

Question 1
Not answered
Marked out of 100.00

Flag question

Question text

Given the two orthogonal projections of the object (top view and front view), identify the third corresponding view (side view)

- (a) 5
- (b) 3
- (c) 1
- (d) 4
- (e) 2

Feedback

Risposta errata.

The correct answer is: 2

Question 2
Not answered
Marked out of 100.00

Flag question

Question text

What kind of representation is used in the figure?

(a) Accidental perspective

- (b) Isometric orthogonal axonometry
- (c) Central perspective
- (d) Front elevation
- (e) Blueprint

Feedback

Risposta errata.

The correct answer is: Isometric orthogonal axonometry

Question 3
Not answered
Marked out of 100.00

Flag question

Question text

Which is the command to make a new directory in the terminal?

- (a) mkdir
- (b) cd
- (c) del
- (d) rm
- (e) ren

Feedback

Risposta errata.

The correct answer is: mkdir

Question 4
Not answered
Marked out of 100.00

Flag question

Question text

Given the figure, which will be the value of a at the end of the program?

- (a) 120
- (b) 12
- (c) 30
- (d) 20
- (e) 15

Feedback

Risposta errata.

Please note that the if instruction is useless, since a is always greater than 3 (it starts from 5 and increases).Therefore the if is never opened.

The correct answer is: 15

Question 5
Not answered
Marked out of 100.00

Flag question

Question text

A programming language is called interpreted when...

- (a) never, interpreted languages does not exist

- (b) the source code is interpreted on-the-flight but the code is executed in a order that is decided by the compiler
- (c) the source code is interpreted on-the-flight and, consequently, the code is executed step-by-step
- (d) the source code is executed after being compiled, only
- (e) a dedicated software reads the source code and decides which is the most performant version of the instructions to execute

Feedback

Risposta errata.

The correct answer is: the source code is interpreted on-the-flight and, consequently, the code is executed step-by-step

Question 6
Not answered
Marked out of 100.00

Flag question

Question text

At what scale is it preferable to represent a complex object with an approximate size of 100x100x100 mm?

- (a) scale 1:1000
- (b) scale 1:1 or 1:2
- (c) scale 10:1 or 20:1
- (d) scale 1:20 or 1:30
- (e) scale 1:50 or 1:100

Feedback

Risposta errata.

The correct answer is: scale 1:1 or 1:2