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DAAN

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English  
TOLC-I

بدون پاسخانہ

# SAMPLE QUIZ TOLC-I

MATHEMATICS

LOGIC

SCIENCE

READING COMPREHENSION

DAAN INTERNATIONAL ACADEMY Edizioni CISIA

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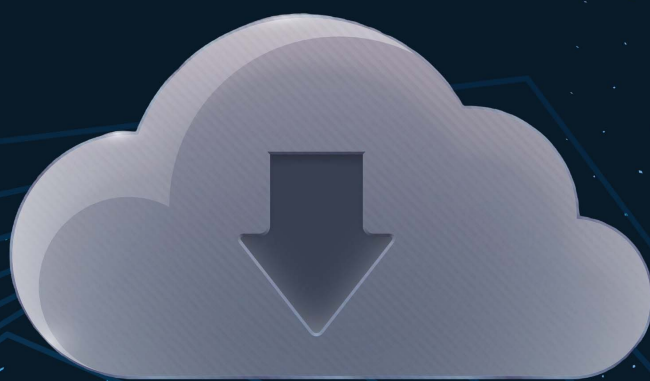
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## MATHEMATICS

1. Lewis has two sons who are 15 and 11 years old respectively. In 18 years, Lewis' age will be equal to the sum of his sons' age. How old is Lewis now?
- A. 30
  - B. There is insufficient data to answer.
  - C. 52
  - D. 26
  - E. 44

دانلود

# مجموعه کامل آموزشی



اطلاعات بیشتر



2. Find  $x$  such that  $\cos(x) + \sin(x) = 0$ .

- A.  $x = \frac{\pi}{4}$
- B.  $x = 0$
- C.  $x = \pi$
- D.  $x = \frac{\pi}{2}$
- E.  $x = \frac{3\pi}{4}$

3. Consider the equation  $\sin(x) = 2 - k$ , with  $0 \leq x \leq \pi$ . This equation has *at least* one solution if and only if:

- A.  $k \geq 1$
- B.  $1 \leq k \leq 2$
- C.  $k \leq 2$
- D.  $-1 \leq k \leq 1$
- E.  $1 \leq k \leq 3$

4. If  $x$  is a real number, the inequality  $x^4 + 5 < 0$  is satisfied for:

- A. all  $x$
- B.  $x = -5$
- C. no values of  $x$
- D.  $x > -5$
- E.  $x < -\sqrt[4]{5}$

5. If  $x$  is a real number, what is the solution set of the following inequality?

$$\frac{x+3}{x+1} \geq 2$$

- A.  $-1 < x \leq 2$
- B.  $x \leq 1$
- C.  $x \geq 1$
- D.  $x < -1$
- E.  $-1 < x \leq 1$

6. If we divide  $x^5 - 3x^4 + 3$  by  $x + 1$  the remainder is:
- A.  $-1$
  - B.  $1$
  - C.  $3$
  - D.  $0$
  - E.  $x - 1$
7. Consider an *isosceles* right triangle  $T$ . The sum of the cosines of the internal angles of  $T$  is:
- A.  $2$
  - B.  $1$
  - C.  $\sqrt{3}$
  - D.  $1 + \sqrt{2}$
  - E.  $\sqrt{2}$

8. Which of the following equalities is satisfied for all real numbers  $x$  and  $y$ ?

A.  $3^{x+y}3^{x-y} = 3^{x^2-y^2}$

B.  $3^{x+y}3^{x-y} = (3^x)^2$

C.  $3^{x+y}3^{x-y} = 3^{x^2} - 3^{y^2}$

D.  $3^{x+y}3^{x-y} = 3^{x^2}$

E.  $3^{x+y}3^{x-y} = 3^x(3^y3^{-y})$

9. Consider a circle with centre  $O$  and a 1 cm-long radius. Let  $P$  be a point outside this circle.

The tangent lines from  $P$  to the circle meet the circumference in two points  $A$  and  $B$ .

We know that the area of  $PAOB$  is equal to  $\sqrt{3} \text{ cm}^2$ . What is the distance between  $P$  and  $O$ ?

- A. 3 cm
- B. 2 cm
- C. 4 cm
- D.  $\frac{\sqrt{3}}{2} \text{ cm}$
- E.  $\frac{3}{2} \text{ cm}$

10. Let  $x$  be a non-zero real number. The equation  $x + \frac{1}{x} = k$  has one and only one solution if:

- A.  $k = 1$
- B.  $k = 3$
- C.  $k = -3$
- D.  $k = -1$
- E.  $k = 2$

11. The Cartesian equation

$$x^2 + y^2 + 4x = \gamma$$

with  $\gamma$  a positive real number, represents:

- A. a circumference centred in  $(-2, 0)$  with radius  $\sqrt{\gamma + 4}$
- B. a circumference centred in  $(0, -4)$  with radius  $\sqrt{\gamma + 2}$
- C. a circumference centred in  $(0, 0)$  with radius  $\sqrt{\gamma}$
- D. a circumference centred in  $(-4, 0)$  with radius  $\sqrt{\gamma + 2}$
- E. a circumference centred in  $(0, -2)$  with radius  $\sqrt{\gamma + 4}$

12. Let  $x$  be a positive real number and  $f(x) = \log_{10} x$ . Then  $f(10 \cdot x^{-2})$  is equal to:

A.  $\frac{1}{f(x)}$

B.  $2 - 2f(x)$

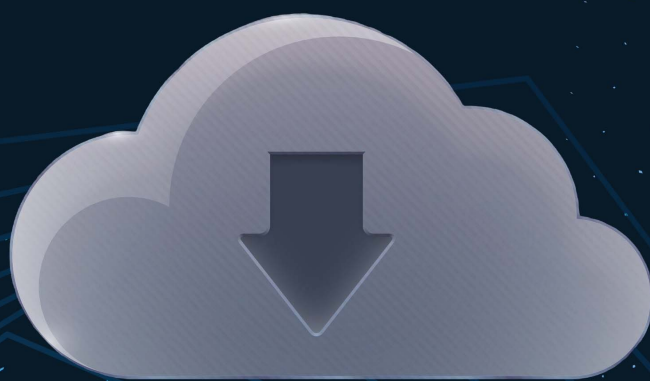
C.  $1 - 2f(x)$

D.  $\frac{1}{2f(x)}$

E.  $-2f(x)$

دانلود

# مجموعه کامل آموزشی



اطلاعات بیشتر



13. Consider a semicircle with diameter  $AB = 2$  cm and centre  $O$ . If we take away the semicircle of diameter  $AO$ , then we rotate the resulting figure along  $AB$  by  $360^\circ$ , we obtain a solid whose volume is:

A.  $\frac{25}{3}\pi \text{ cm}^3$

B.  $\frac{7}{6}\pi \text{ cm}^3$

C.  $\frac{5}{6}\pi \text{ cm}^3$

D.  $4\pi \text{ cm}^3$

E.  $\frac{28}{3}\pi \text{ cm}^3$

14. How many points  $P(x,y)$  on a Cartesian plane satisfy the following conditions?

$$(x + y)^2 = 1, \quad x^2 + y^2 = 1, \quad x + y \leq 0$$

- A. One.
  - B. Two.
  - C. Infinite.
  - D. Zero.
  - E. Four.
15. Consider two points  $A(0,0)$  and  $B(1, 1)$  on a Cartesian plane. The equation of the axis of the segment  $AB$  is:

A.  $y = \frac{1}{2} - x$

B.  $y = 2 - x$

C.  $y = 1 - \frac{x}{2}$

D.  $y = 1 - x$

E.  $y = \frac{1 - x}{2}$

16. The number  $\left(\frac{81}{\sqrt{64}}\right)^{1/4}$  is equivalent to:

A.  $\frac{3}{\sqrt{2}}$

B.  $\frac{3}{2\sqrt{2}}$

C.  $\frac{24}{8^{5/4}}$

D.  $\frac{24}{64}$

E.  $\frac{3}{2}$

17. The following expression

$$\frac{(3^{20} + 3^{20} + 3^{20})^{1/3}}{(3^3)^2}$$

is equal to:

A.  $3^2$

B. 1

C. 3

D.  $\frac{1}{3}$

E.  $\frac{1}{9}$

18. Let  $Q$  be a square of side  $\ell$ ,  $C_1$  a circle circumscribed around  $Q$ , and  $C_2$  a circle inscribed in  $Q$ .

The ratio between the area of  $C_1$  and the area of  $C_2$  is:

- A. 4
- B. 2
- C.  $\sqrt{2}$
- D. depends on the value of  $\ell$
- E.  $2\sqrt{2}$

19. Consider an equilateral triangle  $ABC$  whose side is 2 cm long. Let  $D$ ,  $E$ , and  $F$  be the midpoints of  $AB$ ,  $BC$ , and  $AC$  respectively. Find the area of the rhombus  $DECF$ .
- A.  $\frac{\sqrt{3}}{2} \text{ cm}^2$
- B.  $2 \text{ cm}^2$
- C.  $\sqrt{3} \text{ cm}^2$
- D.  $\sqrt{2} \text{ cm}^2$
- E.  $\frac{1}{\sqrt{3}} \text{ cm}^2$
20. 30% of the students enrolled in a university course passed the final exam during the first session. 10% of the remaining students passed the exam during the second session. How many students still have to pass the exam after the first two sessions? Express the result as a percentage of the total number of students enrolled in the course.
- A. 37%
- B. 63%
- C. 70%
- D. 60%
- E. 40%