

Surname: ..... Given Name: .....

Birth date: ..... High School Graduation Year: .....

Program applied for: .....

1. How many percentage of 400 is 80?

Answer: ..... (20%)

2. Compute the average of the numbers 1, 8, 5, 9, 3.

Answer: ..... (5.2)

3. Write the decimal form of the number  $1.32 \cdot 10^4$ ?

Answer: ..... (13200)

4. What is the value of  $\frac{2}{5} - \frac{4}{3}$ ?

Answer: ..... ( $-\frac{14}{15}$ )

5. What is the value of  $2^{-3} + 3^{-2}$ ?

Answer: ..... ( $\frac{17}{72}$ )

6. Let  $A = \{1, 3, 4, 5, 6, 7, 8\}$  and  $B = \{1, 3, 5, 9\}$ . How many elements has  $(A \cup B) \setminus (A \cap B)$ ?

Answer: ..... (5)

7. What are the solutions of the equation  $x^2 - 25 = 0$ ?

Answer: ..... ( $x_1 = 5, x_2 = -5$ )

8. Solve the following system of equations!

$$\begin{aligned} 2x + 3y &= -2 \\ x + 2y &= -2 \end{aligned}$$

Answer: ..... ( $x = 2, y = -2$ )

9. Determine the maximal domains of the functions  $f(x) = \frac{1}{x-5}$  and  $g(x) = \sqrt{8-2x}$ ?

Answer: ..... ( $D_f = \{x \in \mathbb{R} \mid x \neq 5\}$   $D_g = \{x \in \mathbb{R} \mid x \leq 4\}$ )

10. What are the values of  $\sin\left(\frac{\pi}{3}\right)$  and  $\cos\left(-\frac{\pi}{3}\right)$ ?

Answer: .....  $\left(\sin\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}, \quad \cos\left(-\frac{\pi}{3}\right) = \frac{1}{2}\right)$

11. How long is the diagonal of a rectangle with sides 8 and 6.

Answer: ..... (10)

12. How many diagonals has a convex 7-polygon?

Answer: ..... (14)

13. What are the coordinates of centre of the circle given by the equation  $x^2 - 4x + y^2 + 4y = 0$ ?

Answer: .....  $(C(2, -2))$

14. What is the solution of the logarithmic equation  $\log_3(x - 2) = 1$  ?

Answer: ..... (5)

15. What is the equation of the line passing through the points  $(0, -1)$  and  $(2, 3)$ ?

Answer: .....  $(y = 2x - 1)$

16. What is the area of the triangle determined by  $A = (1, 4)$ ,  $B = (0, 2)$ ,  $C = (3, 0)$ ?

Answer: ..... (4)

17. What is the period of the function  $f : \mathbb{R} \mapsto \mathbb{R}$ ,  $f(x) = \tan\left(\frac{x}{3}\right)$ ?

Answer: .....  $(3\pi)$

18. What is the minimal value of the function  $g(x) = x^2 - 4x + 5$ ?

Answer: ..... (1)

19. How many 2-element subsets does the set  $\{1, 2, 3, 4, 5, 6\}$  have?

Answer: ..... (15)

20. How many 6-digit numbers can be made out of the digits 1, 2, 2, 3, 3, 4?

Answer: ..... (180)