

1. If $y(x-1) = z$ then $x =$

- A. $y-z$
- B. $z/y + 1$
- C. $y(z-1)$
- D. $z(y-1)$

2. If $3x = 6x - 15$ then $x + 8 =$

- A. 13
- B. 10
- C. 11
- D. 12

3. If $3x + 5x = -8$, then $x + 1 =$

- A. -2
- B. -1
- C. 0
- D. 1

4. If $8x + 5x + 2x + 4x = 114$, then $5x + 3 =$

- A. 12
- B. 25
- C. 33
- D. 47

5. If $y = 3$, then $y^3(y^3 - y) =$

- A. 300
- B. 459
- C. 648
- D. 999

6. Solve the following equation for A : $2A/3 = 8 + 4A$

- A. -2.4
- B. 2.4
- C. 1.3
- D. -1.3

7. If $r = 5z$ then $15z = 3y$, then $r =$

- A. y
- B. $2y$
- C. $5y$
- D. $10y$

8. Divide x^5 by x^2

- A. x^7
- B. x^4
- C. x^{10}
- D. x^3

9. If $8x + 5 = 21$, then $3x + 4 =$

- A. 2
- B. 5
- C. 10
- D. 16

10. In the fraction $3/x$, x may not be substituted by which of the following sets?

- A. $\{1, 2, 4\}$
- B. $\{-2, -3, -4\}$
- C. $\{1, 3, 7\}$
- D. $\{0, 10, 20\}$

11. If one of the roots of the quadratic equation $x^2 + mx + 24 = 0$ is 1.5, then what is the value of m ?

- A. -22.5
- B. 16
- C. -10.5
- D. -17.5

12. Find the remainder when the polynomial $x^4 - 3x^2 + 7x - 10$ is divided by $x - 2$.

- A. 8
- B. -20
- C. 18
- D. 0

13. If one of the roots of the quadratic equation $2x^2 - 7x + q = 0$ is 3, then find the other root.

- A. -3
- B. -1/2
- C. 1/2
- D. 1/4

14. If p and q are the roots of the equation $x^2 - bx + c = 0$, then what is the equation if the roots are $(pq + p + q)$ and $(pq - p - q)$?

- A. $x^2 - 2cx + (c^2 - b^2) = 0$
- B. $x^2 - 2bx + (b^2 + c^2) = 0$
- C. $Bcx^2 - 2(b+c)x + c^2 = 0$
- D. $x^2 + 2bx - (c^2 - b^2) = 0$

15. If $(x + 2)^2 = 9$ and $(y + 3)^2 = 25$, then the maximum value of x / y is.

- A. 1 / 2
- B. 5 / 2
- C. 5 / 8
- D. 1 / 8

16. For what values of 'm' is $y = 0$, if $y = x^2 + (2m + 1)x + m^2 - 1$? x is a real number.

- A. $m \geq -2$
- B. $m < 0$
- C. $m = 0$
- D. $m \geq -1.25$

17. Let R be the real line. Consider the following subsets of the plane $R \times R$.
 $S = \{(x, y) : y = x + 1 \text{ and } 0 < t = \dots\}$

- (a) neither S nor T is an equivalence relation on R
- (b) both S and T are equivalence relations on R
- (c) S is an equivalence relation on R but T is not
- (d) T is an equivalence relation on R but S is not

18. The point diametrically opposite to the point $P(1, 0)$ on the circle $x^2 + y^2 + 2x + 4y - 3 = 0$ is:

- A. $(-3, -4)$
- B. $(-3, 4)$
- C. $(3, 4)$
- D. $(-4, -1)$