Content Questions

7. $50 - 25 \times \frac{1}{5} + \frac{9}{(-1)^2} =$

(A) 54 (B) 36 (C) 45 (D) 14 (E) None of the above

8. $\frac{2(x+3)-4(x-1)}{x-1} =$

(A) $\frac{-2x+2}{x-1}$ (B) $\frac{-2x+5}{x-1}$ (C) $2x+2$ (D) $\frac{10-2x}{x-1}$ (E) None of the above

9. If $h \neq 0$, then $\frac{\frac{1}{x+h+1} - \frac{1}{x+1}}{h} =$

(A) $\frac{1}{(x+1)(x+h+1)}$ (B) $\frac{-1}{(x+1)(x+h+1)}$

(C) $\frac{-h}{(x+1)(x+h+1)}$ (D) $\frac{-1}{(x+1)^2}$ (E) None of the above

10. Which of the following fractions is equivalent to $\frac{1}{n} - \frac{1}{n+1}$?

(A) $\frac{1}{n(n+1)}$ (B) $\frac{0}{-1}$ (C) $\frac{-1}{n(n+1)}$ (D) This cannot be written as a single fraction

(E) None of the above

11. Which of the following is equivalent to $(r-3)^2$?

(A) $r^2 - 9$ (B) $r^2 + 9$ (C) $r^2 + 6r + 9$ (D) $r^2 - 6$ (E) None of the above

12. Which of the following is equivalent to $\sqrt{q^2 - 16}$.

(A) $q - 4$ (B) $q + 4$ (C) $(q-4)^{1/2}(q+4)^{1/2}$ (D) $q - 8$ (E) None of the above

Simplify $\sqrt{x^2 - 6x + 9}$.

$|x-3|$ (B) $x - 3$ (C) $\pm(x-3)$ (D) $x - \sqrt{6x} + 3$ (E) None of the above

14. Only one of the following statements is true. Which one?

(A) $\frac{m}{0} = 0$ (B) $\frac{a-b}{b} = -1 + \frac{a}{b}$ (C) $\sqrt{x^2-9} = x-3$ (D) $(q+2)^2 = q^2+4$

(E) None of these are true.

15. Find all possible solutions of the equation $|5x-2| = 4x$.

(A) $x = -2, 2$ (B) $x = 2$ (C) $x = -\frac{2}{9}$ (D) $x = \frac{2}{9}, 2$ (E) None of the above

16. The solutions to the system of equations $x + 5y = 4$, $5x + 20y = 13$ are:

(A) $x = 17$, $y = -\frac{13}{5}$ (B) $x = -3$, $y = \frac{7}{5}$ (C) Inconsistent (no solutions)

(D) Dependent (infinitely many solutions) (E) None of the above

17. Which of the following is a solution to the equation $3x - y = 7$?

(A) $x = \frac{1}{7}, y = \frac{-4}{7}$ (B) $x = \frac{1}{5}, y = \frac{-32}{5}$ (C) $x = \frac{1}{3}, y = 7$ (D) $x = \frac{2}{5}, y = \frac{-1}{5}$

(E) None of the above

18. If $f(x) = x^2 + 3x$, then $f(h+6) =$

(A) $h^2 + 3h + 42$ (B) $h^2 + 3h + 6$ (C) $h^2 + 3h + 54$ (D) $h^2 + 15h + 54$

(E) None of the above

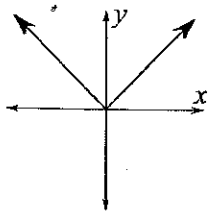
19. The function $f(x) = |x-1|$ can be defined by

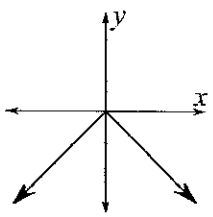
(A) $f(x) = \begin{cases} x-1 & \text{if } x \geq 1; \\ 1-x & \text{if } x < 1. \end{cases}$ (B) $f(x) = \begin{cases} x-1 & \text{if } x \neq 1; \\ 0 & \text{if } x = 1. \end{cases}$

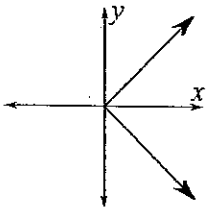
(C) $f(x) = \begin{cases} x-1 & \text{if } x \leq 1; \\ 1-x & \text{if } x > 1. \end{cases}$ (D) $f(x) = \begin{cases} 0 & \text{if } x \neq 1; \\ x-1 & \text{if } x = 1. \end{cases}$

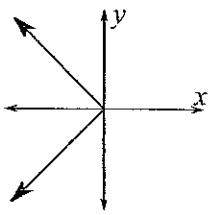
(E) None of the above

20. Which of the following is the graph of $y = -|-x|$?

(A) 

(B) 

(C) 

(D) 

(E) None of the above

21. A circle has radius r. Suppose the radius is increased by 1. What is the change in the circumference?

(A) r^2 (B) 1 (C) 2π (D) π (E) None of the above

22. Find the slope of the line through the points $(2, -1)$ and $(\frac{1}{2}, 1)$.

(A) 0 (B) -4 (C) $\frac{-4}{3}$ (D) -1 (E) None of the above

23. An equation of the line with slope 3 and passing through the point $(2, -1)$ is:

(A) $3x - y + 7 = 0$ (B) $3x - y - 5 = 0$ (C) $3x - y + 5 = 0$ (D) $2x - y + 3 = 0$

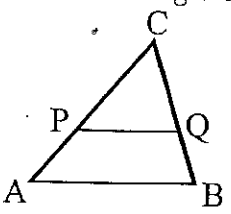
(E) None of the above

24. Which of the following is an equation of the line through $(3, 5)$ and $(-1, 2)$.

(A) $4y = 3x + 11$ (B) $y = \frac{3}{4}(x - 3) - 5$ (C) $3x + 4y = 11$ (D) $3x + 5y = -1$

(E) None of the above

25. In the triangle below, sides PQ and AB are parallel. If $|CP| = 3$, $|CA| = 5$, and $|CB| = 2$, find $|CQ|$.



(A) $\frac{3}{2}$ (B) $\frac{3}{5}$ (C) $\frac{5}{3}$ (D) $\frac{5}{2}$ (E) None of the above

26. $2(64x^{1/2}y^9)^{-2/3} =$

(A) $-\frac{256}{3x^{1/2}y^6}$ (B) $-32x^{1/3}y^6$ (C) $128x^{-1/6}y^{25/3}$ (D) $\frac{1}{8x^{1/3}y^6}$

(E) None of the above

27. The equation $4^x = 8^{x-5}$ has solution:

(A) $x = 10$ (B) $x = -5$ (C) $x = 15$ (D) $x = 5$ (E) None of the above

28. The expression $\log_3(\frac{1}{27})$ evaluates to:

(A) $\frac{1}{3}$ (B) 3 (C) 9 (D) $\frac{1}{9}$ (E) None of the above

29. The equation $\log_5(2x - 3) = 0$ has solution:

(A) $x = 4$ (B) $x = \frac{3}{2}$ (C) $x = 2$ (D) no solution (E) None of the above

30. If $x = \frac{\pi}{4}$, then $\cos(2x) =$?

(A) $\cos 2(\frac{\sqrt{2}}{2})$ (B) $\sqrt{2}$ (C) 0 (D) 1 (E) None of the above

31. $\frac{\pi}{2}$ radians = (A) 360° (B) 90° (C) 180° (D) 1.57° (E) None of the above

THIS IS THE END OF THE TEST