1. Solve the equation: $2x - 5 = 7x + 4$

   A) x = -9/5   B) x = -5/9   C) x = 9/5   D) x = 5/9   E) not given

2. Solve the equation: $3(x - 9) = 8$

   A) x = 35/3   B) x = 15   C) x = 1   D) x = 29/3   E) not given

3. Solve the equation: $x^2 - 3x - 4 = 0$

   A) x = -4, x = -1   B) x = 4, x = -1   C) x = -4, x = 1   D) x= 4, x = 1   E) not given

4. Solve the equation: $\dfrac{2x}{3} = \dfrac{8}{9}$

   A) x = 1/2   B) x= 2   C) x = 3/4   D) x = 4/3   E) not given

5. Solve the equation for y: $|2y - 3| = 5$

   A) y = 4   B) y = -1   C) both A and B   D) no solution   E) not given

6. Solve the inequality: $3x - 7 < -4$

   A) x < 1   B) x > 1   C) x > 11/3   D) x < 11/3   E) not given

7. Which of the following is a solution to the inequality: $|2x - 5| \le -2$

   A) x = 1   B) x = 2   C) both A and B   D) x = -10   E) no solution

8. Solve for A, if x = 1 and y = -2: $3A - x = y^4$

   A) A = 17/3   B) A = -17/3   C) A = -3   D) A = 3   E) not given

9. Solve for x, if y = 1/11: $2x + 11 = 3y - 9$

   A) x = -213/40   B) x = -219/40   C) x = -1/40   D) x = -3/40   E) not given

10. Solve the system and express your answer as an ordered pair: $\begin{cases} 3x - y = 9 \\ 4x + 7y = 37 \end{cases}$

   A) (1, 2)   B) (2, 1)   C) (3, 4)   D) (4, 3)   E) not given

11. Evaluate the expression $\dfrac{7y - 8z}{\sqrt{w + 1}}$, if $w = 3, y = 4, z = 2$.

   A) 3   B) 4   C) 5   D) 6   E) not given

12. Solve the equation: $\sqrt{3x-4}=5$

    A) $x = 3$ B) $x = 7$ C) $x = 29/3$ D) $x = 31/3$ E) not given

13. Solve the equation: $(2x-3)^2 = 100$

    A) $x = -7/2, 13/2$ B) $x = -13/2, 7/2$ C) $x = \pm\dfrac{\sqrt{91}}{2}$ D) $x = \pm\dfrac{\sqrt{109}}{2}$ E) not given

14. Simplify the expression: $\dfrac{x^3 y^7 z^{-2}}{\left(x^2 y^4\right)^{-3}}$

    A) $\dfrac{x^9 y^{19}}{z^2}$ B) $\dfrac{x^{19} y^9}{z^2}$ C) $\dfrac{x^{19} y^2}{z^9}$ D) $\dfrac{x^9 y^2}{z^{10}}$ E) not given

15. Solve the equation: $3^{2x-4} = \dfrac{1}{81}$

    A) $x = -3$ B) $x = 0$ C) $x = 3$ D) $x = 4$ E) not given

16. Solve the equation: $8^{5x} = 17$

    A) $x = \dfrac{1}{5}\log_8 17$ B) $x = \dfrac{1}{5}\log_{17} 8$ C) $x = 17/40$ D) $x = 40/17$ E) not given

17. Simplify the expression: $\dfrac{2}{x-4} + \dfrac{3}{x-1}$

    A) $\dfrac{5}{2x-5}$ B) $\dfrac{5x-14}{(x-4)(x-1)}$ C) $\dfrac{5x-12}{(x-4)(x-1)}$ D) $\dfrac{5}{(x-4)(x-1)}$ E) not given

18. Simplify the expression: $\dfrac{x^2-9}{2x+6}$

    A) $\dfrac{x+3}{2}$ B) $\dfrac{2}{x+3}$ C) $\dfrac{2}{x-3}$ D) $\dfrac{x-3}{2}$ E) not given

19. Which of the following is a factor of $x^3 - 125$

    A) $x^2 + 10x + 25$ B) $x+5$ C) $x^2 - 5x + 25$ D) $x^2 + 5x + 25$ E) not given

20. Simplify: $\dfrac{3}{2-3i}$

A) $\dfrac{6}{13}+\dfrac{9}{13}i$ 　　　B) $\dfrac{6}{13}-\dfrac{9}{13}i$ 　　　C) $\dfrac{6}{5}-\dfrac{9}{5}i$ 　　　D) $\dfrac{6}{5}+\dfrac{9}{5}i$ 　　　E) not given

21. Simplify: $(7-2i)(3+8i)$

A) $5+50i$ 　　　B) $5-50i$ 　　　C) $37+50i$ 　　　D) $37-50i$ 　　　E) not given

22. Simplify: $\sqrt[5]{243x^{12}y^{8}z^{2}}$

A) $3x^{2}y\sqrt[5]{x^{2}y^{3}z^{2}}$ 　　B) $9xy\sqrt[5]{x^{2}y^{3}z^{2}}$ 　　C) $3\sqrt[5]{x^{2}y^{3}z^{2}}$ 　　D) $243xy\sqrt[5]{x^{2}y^{3}z^{2}}$ 　　E) not given

23. Solve: $\log_{3}(2x-1)=1$

A) $x=0$ 　　　B) $x=1$ 　　　C) $x=2$ 　　　D) $x=3$ 　　　E) not given

24. Solve: $\ln(3x-12)=0$

A) $x=11/3$ 　　　B) $x=4$ 　　　C) $x=13/3$ 　　　D) $x=14/3$ 　　　E) not given

25. What conic section is represented by $x^{2}+3y^{2}=24$?

A) Circle 　　　B) Ellipse 　　　C) Hyperbola 　　　D) Parabola 　　　E) not given

26. What conic section is represented by $x+y^{2}=14$?

A) Circle 　　　B) Ellipse 　　　C) Hyperbola 　　　D) Parabola 　　　E) not given

27. What is the vertex of the parabola $y=x^{2}-6x+11$?

A) (6, 11) 　　　B) (-6, 11) 　　　C) (3, 2) 　　　D) (3, 20) 　　　E) not given

28. Find the value of k that makes $4x^{2}+kx+81$ a perfect square trinomial?

A) 9 　　　B) 18 　　　C) 27 　　　D) 36 　　　E) not given

29. Find the discriminant: $x^{2}+6x-8=0$.

A) 4 　　　B) 20 　　　C) 36 　　　D) 52 　　　E) not given

30. Find the distance from (2, 4) to (-1, 8).

    A) 3   B) 4   C) 5   D) 6   E) not given

31. Find the center of the circle that contains the points (3, 9) and (-1, 11).

    A) (1, 10)   B) (-1, 10)   C) (2, 7)   D) (-2, 7)   E) not given

32. Evaluate $f(5)$, if $f(x) = \log_{25} x$.

    A) x = 2   B) x = 1/2   C) x = -2   D) x = -1/2   E) not given

33. Solve for x: $4x^3 = 16x$.

    A) x = 4   B) x = -4   C) x = 0   D) A & B   E) A, B, C

34. Find the slope of the line passing through (4, 1) and (-3, 8).

    A) 1   B) -1   C) 2   D) -2   E) not given

35. Find the x-intercept of the line passing through (5, 2) and (-3, -7).

    A) $\left(\dfrac{29}{8}, 0\right)$ B) $\left(-\dfrac{29}{8}, 0\right)$ C) $\left(0, \dfrac{29}{8}\right)$ D) $\left(0, -\dfrac{29}{8}\right)$ E) not given

36. Where does the vertical asymptote occur in the function, $f(x) = \dfrac{3}{x-7}$?

    A) x = 3   B) x = 4   C) x = 7   D) x = -3/7   E) not given

37. Where does the horizontal asymptote occur in the function, $f(x) = \dfrac{2-3x}{2x+5}$?

    A) y = 3/2   B) y = -3/2   C) y = 2/3   D) y = -2/3   E) not given

38. If p varies directly as the square of q, and p = 41 when q = 6, find the value of p when q is 12.

    A) 82   B) 164   C) 41   D) 20.5   E) not given

39. What is the determinant of matrix A, if $A = \begin{bmatrix} 7 & 1 \\ 2 & 3 \end{bmatrix}$.

    A) 7   B) 1   C) 2   D) 3   E) not given

40. Find $f^{-1}(2)$, if $f(x) = \dfrac{1}{3}x - \dfrac{2}{3}$.

    A) 0   B) 2   C) 4   D) -1/2   E) not given