1. Use order of operations to simplify: \(5^2 - 16 \div 2^2 \cdot 4 - 1\)

2. Let \(A = \{a, b, c\}\), \(B = \{a, c, d, e\}\), and \(C = \{a, d, f, g\}\). Find the indicated sets:
   (a) \(A \cap B\)
   (b) \(C \cup A\)

3. Simplify the exponential expression: \(\left(\frac{1x^{-2}y^3}{2x^5y^2}\right)^{-5}\)

4. Write in scientific notation: 0.0000002345

5. Rationalize the denominator: \(\frac{5}{6 + \sqrt{2}}\)

6. Perform the indicated operation: \((10x^4 - 8x^3 + 2x^2) - (5x^4 - 3x^3 + 2x^2 - 1)\)

7. Multiply: \((x - 3)(x^2 - 4x + 3)\)

8. Factor: \(x^3 - 3x^2 - 9x + 27\)

9. Divide: \(\frac{x^2 - 5x - 24}{x^2 - x - 12} \div \frac{x^2 - 10x + 16}{x^2 + x - 6}\)

10. Add: \(\frac{x}{x^2 - 9} + \frac{x - 1}{x^2 - 5x + 6}\)
11. Graph the equation $y = |x| - 1$ and create a table for $x = -3, -2, -1, 0, 1, 2$, and $3$.

12. Is the following equation an identity, a conditional, or an inconsistent equation?

\[ 7x + 1 = 5(x + 5) + 2x \]

13. Solve by factoring: $x^2 - x - 6 = 0$

14. Solve by square roots: $4x^2 = 16$

15. Solve by completing the square: $x^2 - 10x + 1 = 0$

16. Solve by quadratic formula: $2x^2 - 1x - 3 = 0$

17. Use graphs to find the set: $(-2, 2) \cap [-1, 3)$

18. Solve the equation: $|x + 1| = 9$

19. Solve the inequality: $9 < 2x + 3 \leq 12$

20. Solve the inequality: $|2x + 3| \geq 15$
21. Given $f(x) = x^2 + 3x - 1$, find $f(x + 1)$.

22. Determine if $f(x) = x^3 + x^2$ is even, odd or neither.

23. Find the slope of $(-1, 5)$ and $(2, -4)$

24. Find the equation of a line in slope intercept form through the line $(1, 4)$ and is perpendicular to $3x + 6y = 12$

25. Find the average rate of change of $f(x) = x^2$ as changes from $x_1 = -2$ to $x_2 = 3$

26. Find the domain of $f(x) = \sqrt{x - 5}$

27. Given $f(x) = x^2 + 3$ and $g(x) = x - 1$

   (a) Find $(f - g)(x)$

   (b) Find $(f \circ g)(x)$

   (c) Find $(f \circ g)(1)$

28. Find the midpoint of $(-3, 3)$ and $(-5, 7)$

29. Find the distance between $(1, -2)$ and $(-2, 1)$

30. Find the center and radius of: $(x - 12)^2 + (x + 9)^2 = 25$
31. Given \( f(x) = 2(x + 3)^2 - 5 \)

   (a) Find the vertex.

   (b) Does the graph open upward or downward?

   (c) Does the graph have a maximum or minimum?

   (d) Find the domain.

   (e) Find the range.

32. Find the vertex of \( f(x) = x^2 - 2x + 8 \)

33. Given \( f(x) = x(x - 9)^3(x + 2)^2 \),

   (a) Find the behavior.

   (b) Find the zeros.

   (c) Find the multiplicity of each zero.

   (d) Find if it crosses or touches each x-intercept.

   (e) Find the y-intercept.

34. Divide. You may use the method of your choice. \( (3x^4 - 2x^3 - 1) \div (x + 1) \)

35. List all the POSSIBLE zeros of: \( f(x) = 2x^4 - 5x^2 - 4x - 16 \)

36. Given \( f(x) = \frac{2x^2 + 6x + 4}{x^2 - 3x - 10} \)

   (a) Find the domain

   (b) Find the vertical asymptotes

   (c) Find the horizontal asymptotes

37. Solve: \( \frac{1}{x - 5} \geq 1 \)
38. Graph \( f(x) = \left(\frac{1}{2}\right)^x \)

39. Write in exponential form: \( x = \log_4 97 \)

40. Write in logarithmic form: \( 2^x = 5 \)

41. Evaluate: \( \log_{16} 4 \)

42. Expand: \( \log_2 \frac{x y^2}{64} \)

43. Condense: \( \ln(x) + 3 \ln(x - 2) - 5 \ln(x + 6) - \frac{1}{2} \ln(x - 3) \)

44. Solve: \( \log_3(x - 1) - \log_3(x + 2) = 2 \)

45. Solve: \( 3^{x+2} = 7^{4x-5} \)