1) Solve the inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[ 5 - 3x \leq 8 - x \]

2) Solve the inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[-3 \leq -5x + 12 < 2\]

3) Solve the inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[ \frac{7x - 11}{3} > 2 \]

4) Solve the inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[ \frac{3x - 6}{5} \leq 2 \]

5) Solve the compound inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[-2x < -8 \text{ and } x - 5 < 5\]

6) Solve the compound inequality, write your solution set in interval notation, and graph the solution set on a number line.

\[ 5x - 3 \leq 7 \text{ or } 3 - x < -5\]
7) Simplify the expression: \( \frac{-5^2 - |3-7|}{2^3 - 3^2} \)

8) Solve the following equations:
   
a) \( 10x - 8(x + 2) = 2(x + 4) + 6 \)
   
b) \( \frac{1}{3}(y + 4) + 2 = \frac{1}{4}(3y - 1) - 5 \)
   
c) \( \frac{2x + 7}{8} - 2 = \frac{x - 1}{2} + x \)
   
d) \( 4(x - 6) - x = 8(x - 3) - 5x \)

9) Answer the following:
   
a) How are the slopes of parallel lines related?
   
b) How are the slopes of perpendicular lines related?
   
c) Give one example of a pair of equations of parallel lines.
   
d) Give one example of a pair of equations of perpendicular lines.

10) Rewrite the following in interval notation: \( \{ x | x \leq -3 \text{ or } x > 2 \} \).

11) Rewrite the following in interval notation: \( \{ x | x > -8 \text{ and } x \leq 2 \} \).

12) Tamika invests $3000 in a 5-year CD that pays 5.35% interest compounded monthly. How much will she have in the account at the end of the 5-year period?

13) Jesse makes a $15,000 down payment on a new house. If the down payment is 15% of the total cost of the home, what is the total cost?
14) Annabel bought a new computer for $1444.50 including tax. If the tax rate is 7%, find the price of the computer before taxes.

15) A package of vinyl floor tiles contains 45 one-foot-square tiles. Find how many packages should be bought to cover the rectangular floor of a store that is 120 feet by 90 feet.

16) The cost in dollars, $y$, for manufacturing $x$ calculators, is given by the following equation: $y = 20x + 150$. How many calculators can be manufactured for a total of $5150? 

17) Given the following equation of a line: $2x + 5y = 10$. Find the following:

   a) the slope of the line
   b) the x-intercept of the line
   c) the y-intercept of the line
   d) the slope of a line parallel to this line
   e) the slope of a line perpendicular to this line
   f) the equation of a line perpendicular to this line through the point (-5, 3)
   g) the graphs of the original line and the line found in part (f)

18) Write an equation of the vertical line through the point (3, 5).

19) Write an equation of the horizontal line through the point (3, 5).

20) Make a table of values and draw a graph of the quadratic function given by:

   $y = 2x^2 - 4x + 6$

21) Graph each of the following:

   a) Graph the function: $f(x) = \frac{2}{3}x - 4$
b) Graph the function: \( f(x) = |x + 3| \)

c) Graph the function \( f(x) = (x - 2)^2 \)

22) Sam’s boat can travel 11 miles downstream in the same amount of time it can travel 9 miles upstream. If the speed of his boat in still water is 20 mph, find the speed of the current.

23) If \( y \) varies directly as \( x \) and inversely as \( z \), and if \( y = 10 \) when \( x = 3 \) and \( z = 6 \), find \( y \) when \( x = 4 \) and \( z = 9 \).

24) a) Write an equation in point-slope form of the line through the points \((-2, 4)\) and \((-6, 5)\).

b) Change the equation to slope-intercept form.

c) Change the equation to Standard Form, \( Ax + By = C \), where \( A, B, \) and \( C \) are all integers and \( A \) is positive.

25) Write an equation in point-slope form of the line through the point \((5, -2)\) parallel to the line with equation \(4x - 3y = 9\).

26) If the formula for volume of a sphere is given by \( V = \frac{4\pi r^3}{3} \), find the volume of a sphere of radius \( r = 5 \) centimeters.

27) Evaluate: \( \frac{5 - |3 - 8| - |2 - 6| - 7^2}{|3 - 9|} \)
28) Evaluate: \[
\frac{\left(4.1 \cdot 10^7\right)\left(3.7 \cdot 10^3\right)\left(5.1 \cdot 10^{-4}\right)}{\left(3.2 \cdot 10^3\right)\left(5.5 \cdot 10^{-4}\right)}
\]

29) Perform the indicated operations on the following polynomials:
   a) \((3x^2 - 7x - 9) + (5x^2 - 9x + 8)\)
   b) \((6x^2 - 8x) - (4x^2 - 2x - 5)\)
   c) \((4a^2 - 3ab + 5b^2) - (3a^2 - 3ab + 4b^2)\)
   d) \(-2x^3(3x^4 - 2x^2 + 4)\)

30) Perform the indicated operations:
   a) \((3x - 5)(2x + 3)\)
   b) \((3x + 2)^2\)
   c) \((3x - 2)^2\)
   d) \((2x - 5)(2x + 5)\)

31) Perform the indicated operations and simplify:
   a) \[
   \frac{4x^5 - 16x^3 - 8x^2}{4x^2}
   \]
b) \[ \frac{x^2 + 5x - 24}{x + 8} \]

c) \[ \frac{x - 2}{x^3 - 8} \]

d) \[ \frac{x^2 + 5x + 6}{x + 2} - (x + 7) \]

32) Simplify: \[ \frac{4x^6y^{-7}}{4^3x^{-8}y} \]

33) Perform the indicated operation: \((3x + 1)(9x^2 - 3x + 1)\)

34) Simplify the expression: \[ \left( \frac{a^{-3}b^3}{a^{-1}b^{-4}} \right)^{-3} \]

35) Write in scientific notation:

a) 17,000,000,000
b) 0.0000123

36) Write in standard notation:

a) \(5.03 \times 10^4\)
b) \(9.027 \times 10^{-3}\)
37) Factor each of the following:
   a) $5x^4 - 15x^3$
   b) $a(x + 2) - 3(x + 2)$
   c) $3x^2 + 6xy - 5x - 10y$
   d) $5x^3 + 20x^2 - 105x$

38) Factor the following (if a polynomial cannot be factored, write "prime"):
   a) $x^2 - 6x - 27$
   b) $x^2 + 7x + 10$
   c) $x^2 - 3x + 9$
   d) $x^2 - 10x + 25$
   e) $x^3 - 27y^3$

39) Factor the following (if a polynomial cannot be factored, write "prime"):
   a) $x^2 - 81$
   b) $x^2 + 81$
   c) $x^2 + 18x + 81$
   d) $x^2 - 18x + 81$

40) Simplify the expression: $\frac{6x - 3y}{9}$

41) Simplify the expression: $\frac{x^2 - x - 30}{x^2 - 2x - 24}$

42) Perform the indicated operation and simplify if possible:
43) Perform the indicated operation and simplify if possible:
\[
\frac{x^2 + 5x + 4}{2x^2 + 4x - 16} \cdot \frac{3x^2 - x - 2}{x^2 - x - 2}
\]

44) Perform the indicated operation and simplify if possible:
\[
\frac{x - 5}{x + 3} - \frac{x - 2}{x - 1}
\]

45) Perform the indicated operation and simplify if possible:
\[
\left(\frac{2x}{3}\right)^2 \div \left[\frac{x^2}{x + 1} - \frac{1}{x + 1}\right]
\]

46) Solve the equation:
\[
\frac{1}{x - 3} + \frac{5}{x^2 - 9} = -\frac{1}{x + 3}.
\]

47) Solve the equations:
   a) \(\sqrt{2x + 7} = \sqrt{x + 11}\)
   b) \(\sqrt{4x + 1} - 5 = 2\)
   c) \(x - 2 = \sqrt{2x - 5}\)
48) Solve the equations:
   a) $x^2 + 4x - 3 = 0$
   b) $(x - 3)^2 = 16$
   c) $2y^2 - 6y = 1$
   d) $3x^2 - 2x - 7 = 0$

49) Simplify the following:
   a) $\sqrt[4]{\frac{128x^4y}{49z^6}}$
   b) $\sqrt[4]{16} - \sqrt[3]{27} + \sqrt[3]{343}$
   c) $\frac{15\sqrt{6}}{\sqrt{12}}$
   d) $\frac{3}{\sqrt{6} - \sqrt{2}}$

50) Solve the equation: $\frac{1}{3x + 6} = \frac{1}{x + 5} + \frac{x + 2}{x^2 + 7x + 10}$

51) If $f(x) = x^3 - x^2 + 1$, find each of the following values:
   a) $f(2)$
b) \( f(-2) \)

c) \( f\left(\frac{1}{2}\right) \)

52) In 1995 there were 35 computers in a certain elementary school. In 2000 there were 52 computers in the same school and by 2005 there were 157 computers in the school. In 2008, there were 125 computers in the school.

a) What was the percent increase in number of computers in the school from 1995 to 2000?

b) What was the percent increase in number of computers in the school from 1995 to 2005?

c) What was the percent decrease in number of computers in the school from 2005 to 2008?

53) Monica can mow the lawn in 4 hours using a riding mower. Her daughter can mow the same lawn in 12 hours using a push mower. How long would it take them to mow the lawn if they are working together?

54) The perimeter of a rectangle is 360 feet. The length of the rectangle is 60 feet less than twice the width of the rectangle. What are the dimensions of the rectangle?

55) According to the World Health Organization, in 2002 the annual cigarette consumption per person in Japan was 3023. If the population in Japan in 2002 was 127,096,000, how many cigarettes were consumed in Japan in 2002? Write your answer using scientific notation rounded to three decimal places.

56) Simplify the expression: \( \frac{(2x^3)^4 (5x^2y^3)^0}{(8x^4y^3)^2} \).
57) Simplify $\frac{3x^3 - 6x^2 + 4x - 8}{x - 2}$.

58) Draw a graph of the following: $y = |x - 2| + 1$.

59) Simplify: $\left( \frac{27x^3 y^9}{64x^{-12} y^{15}} \right)^{\frac{2}{3}}$.

60) For what values of $x$ is the following expression undefined? $\frac{x - 2}{3x^3 + 9x^2 - 12x}$