MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the given conditions to write an equation for the line in point–slope form.

1) Passing through (8, 5) and (4, 2)
   A) \( y - 5 = \frac{3}{4}(x - 4) \) or \( y - 2 = \frac{3}{4}(x - 8) \)
   B) \( y + 5 = \frac{3}{4}(x + 8) \) or \( y + 2 = \frac{3}{4}(x + 4) \)
   C) \( y - 5 = \frac{3}{4}(x - 8) \) or \( y - 2 = \frac{3}{4}(x - 4) \)
   D) \( y - 5 = 8(x + 8) \) or \( y - 2 = 4(x - 5) \)

Determine the slope and the \( y \)-intercept of the graph of the equation.

2) \( 12x + y - 4 = 0 \)
   A) \( m = -12; (0, 4) \)
   B) \( m = 3; (0, \frac{1}{4}) \)
   C) \( m = 12; (0, 4) \)
   D) \( m = -\frac{1}{12}; (0, \frac{1}{4}) \)

Use the given conditions to write an equation for the line in the indicated form.

3) Passing through (4, -1) and parallel to the line whose equation is \( y = -2x + 3 \);
   point–slope form
   A) \( y + 1 = -2(x - 4) \)
   B) \( y = 2x \)
   C) \( y + 1 = x - 4 \)
   D) \( y - 4 = -2(x + 1) \)

Solve and check the linear equation.

4) \( 9x - 1 = -5 + 8x \)
   A) \( \left\{ \frac{1}{4} \right\} \)
   B) \( \left\{ -\frac{1}{4} \right\} \)
   C) \( \left\{ -\frac{17}{6} \right\} \)
   D) \( \left\{ -4 \right\} \)

5) \(-2[7x - 7 - 6(x + 1)] = 2x + 5 \)
   A) \( \left\{ -3 \right\} \)
   B) \( \left\{ 1 \right\} \)
   C) \( \left\{ \frac{21}{4} \right\} \)
   D) \( \left\{ -\frac{7}{4} \right\} \)

Determine whether the given quadratic function has a minimum value or maximum value. Then find the coordinates of the minimum or maximum point.

6) \( f(x) = -3x^2 - 3x \)
   A) minimum; \( \left( \frac{1}{2}, -\frac{3}{4} \right) \)
   B) minimum; \( \left( -\frac{1}{2}, \frac{3}{4} \right) \)
   C) maximum; \( \left( -\frac{1}{2}, \frac{3}{4} \right) \)
   D) maximum; \( \left( \frac{1}{2}, -\frac{3}{4} \right) \)

Find the range of the quadratic function.

7) \( f(x) = (x + 1)^2 - 4 \)
   A) \([-1, \infty)\)
   B) \([-4, \infty)\)
   C) \((-\infty, -4]\)
   D) \((-\infty, -1]\)
Find the x-intercepts (if any) for the graph of the quadratic function.

8) \( f(x) = 6 + 5x + x^2 \)
   A) \((-3, 0)\) and \((-2, 0)\)  
   B) \((3, 0)\) and \((2, 0)\)  
   C) \((-3, 0)\) and \((2, 0)\)  
   D) \((3, 0)\) and \((-2, 0)\)  

Find the product and write the result in standard form.

9) \((9 + 8i)^2\)
   A) 17  
   B) 145 + 144i  
   C) 81 + 144i + 64i^2  
   D) 17 + 144i  

Divide and express the result in standard form.

10) \(\frac{7 + 5i}{8 - 7i}\)
   A) \(\frac{7}{5} + \frac{89}{15}i\)  
   B) \(\frac{21}{113} + \frac{89}{113}i\)  
   C) \(\frac{91}{113} + \frac{9}{113}i\)  
   D) \(\frac{91}{15} + \frac{89}{15}i\)  

Solve the equation by factoring.

11) \(x^2 + 2x - 48 = 0\)
   A) \(\{8, 6\}\)  
   B) \(\{-8, 6\}\)  
   C) \(\{8, -6\}\)  
   D) \(\{-8, 1\}\)  

Solve the equation using the quadratic formula.

12) \(7x^2 = -8x - 2\)
   A) \(\left\{\frac{-4 - \sqrt{30}}{7}, \frac{-4 + \sqrt{30}}{7}\right\}\)  
   B) \(\left\{\frac{-8 - \sqrt{2}}{7}, \frac{-8 + \sqrt{2}}{7}\right\}\)  
   C) \(\left\{\frac{-4 - \sqrt{2}}{7}, \frac{-4 + \sqrt{2}}{7}\right\}\)  
   D) \(\left\{\frac{-4 - \sqrt{2}}{14}, \frac{-4 + \sqrt{2}}{14}\right\}\)  

Solve using the quadratic formula. Round any solutions to two decimal places.

13) \(\frac{1}{4}x^2 - 2\sqrt{3} x = 3\)
   A) \(\{0.82, -14.67\}\)  
   B) \(\{0.21, -14.67\}\)  
   C) \(\{-0.82, 14.67\}\)  
   D) \(\{-0.21, 14.67\}\)  

Solve the radical equation, and check all proposed solutions.

14) \(\sqrt{14x - 7} = x + 3\)
   A) \(\{4\}\)  
   B) \(\{-4\}\)  
   C) \(\{-3\}\)  
   D) \(\{3\}\)  

Solve the equation by making an appropriate substitution.

15) \(x^4 - 13x^2 + 36 = 0\)
   A) \(\{-2i, 2i, -3i, 3i\}\)  
   B) \(\{4, 9\}\)  
   C) \(\{-2, 2, -3, 3\}\)  
   D) \(\{2, 3\}\)  

Find the zeros of the polynomial function.

16) \(f(x) = x^3 + 2x^2 - x - 2\)
   A) \(x = 4\)  
   B) \(x = -1, x = 1, x = -2\)  
   C) \(x = 1, x = -2, x = 2\)  
   D) \(x = -2, x = 2\)
Using a graphing calculator, estimate the relative maxima and minima of the polynomial function.

17) \( f(x) = x^3 - 12x + 2 \)

A) Relative maximum: 18 at \( x = -2 \), Relative minimum: -14 at \( x = 2 \)

B) None

C) Relative maximum: 18 at \( x = -2 \), Relative minimum: 0 at \( x = 0 \)

D) Relative maximum: 0 at \( x = 0 \)

Solve the absolute value inequality. Other than \( \emptyset \), use interval notation to express the solution set and graph the solution set on a number line.

18) \(|x - 6| < 4\)  

A) \([2, 10]\)

B) \(\emptyset\)

C) \((-\infty, 2) \cup (10, \infty)\)

D) \((2, 10)\)

Solve the polynomial inequality and graph the solution set on a number line. Express the solution set in interval notation.

19) \(x^2 - 6x + 5 > 0\)  

A) \((-\infty, 1) \cup (5, \infty)\)

B) \(5, \infty)\)

C) \((-\infty, 1)\)

D) \((1, 5)\)
Determine the long run behavior of the polynomial function.

20) \( f(x) = -5x^4 - 2x^3 - 4x^2 - 4x + 2 \)

A) falls to the left and rises to the right
B) rises to the left and rises to the right
C) rises to the left and falls to the right
D) falls to the left and falls to the right