1. Multiply: \((7x - 4y)^2\)
   A) \(49x^2 - 16y^2\)
   B) \(49x^2 + 16y^2\)
   C) \(49x^2 - 56xy + 16y^2\)
   D) \(49x^2 - 28xy + 16y^2\)
   E) None of these.

2. Rewrite \(|\sqrt{5} - 6|\) without absolute value bars.
   A) 1
   B) \(-1\)
   C) \(\sqrt{5} - 6\)
   D) \(6 - \sqrt{5}\)
   E) \(6 + \sqrt{5}\)

3. Including 6.5% sales tax, a diamond ring sold for $2875.50. Find the price of the ring before tax.
   A) $3062.41
   B) $2731.73
   C) $2700.00
   D) $2688.59
   E) $186.91
4. Find the solution of \(-12x + 18 \leq -3(3x - 11)\).

A) \((-\infty, -5]\)
B) \([-5, \infty)
C) \((-\infty, 5]
D) \([5, \infty)
E) \text{None of these.}

5. Simplify: \(\left(\frac{a^4 b}{a^2 b^4}\right)^8\)

A) 0
B) 1
C) \(\frac{a}{b^8}\)
D) \(a^5 b^8\)
E) None of these.

6. Which of the following functions is even?

A) \(f(x) = 3x\)
B) \(g(x) = 3x^2\)
C) \(h(x) = 3x^3\)
D) \(k(x) = x + 3\)
E) \text{None of these are even.}

7. Find the solution of \(\frac{4}{x+2} + \frac{3}{x-2} = \frac{12}{x^2-4}\).

A) \(\{2, -2\}\)
B) \(\{2\}\)
C) \(\{-2\}\)
D) \(\{0\}\)
E) \text{There is no solution.}
8. If a rock falls from a height of 70 meters above the ground, the height \( H \) (in meters) after \( x \) seconds can be approximated using the formula \( H = 70 - 4.9x^2 \). What is the height of the rock after 2 seconds?

A) 260.4 m  
B) 60.2 m  
C) 50.4 m  
D) 26.04 m  
E) None of these.

9. Factor completely: \( c^3 + 7c - 2c^2 - 14 \)

A) \((x + 2)(x^2 + 7)\)  
B) \((x - 2)(2x^2 + 7)\)  
C) \((x - 2)(x^2 + 7)\)  
D) \((x + 2)(x + 7)\)  
E) \((x + 2)(x^2 - 7)\)

10. Simplify: \( \frac{m^3 - n^3}{m - n} \)

A) \(m^2 - n^2\)  
B) \(m^2 + n^2\)  
C) \(m^2 - mn + n^2\)  
D) \(m^2 + mn + n^2\)  
E) None of these.

11. Divide: \( \frac{(x + 2)^2}{x - 2} \div \frac{x^2 - 4}{2x - 4} \)

A) \(\frac{(x + 2)^2}{x - 2}\)  
B) \(\frac{x + 2}{2(x - 2)}\)  
C) \(\frac{2(x + 2)}{x - 2}\)  
D) \(\frac{4(x^2 + 4)}{x^2 - 4}\)
12. Given \( f(x) = 2x^2 - 3x + 1 \), evaluate \( f(3) - f(2) \).

A) 13  
B) 7  
C) 1  
D) 0  
E) None of these.

13. Subtract: \( \frac{6}{x+3} - \frac{4}{x-3} \)

A) \( \frac{2x+30}{x^2 - 9} \) 
B) \( \frac{2}{x^2 - 9} \) 
C) \( \frac{2x - 30}{x^2 - 9} \) 
D) \( \frac{2}{x+3} \) 
E) None of these.

14. Find the solution \( 11 < 3x + 2 < 17 \).

A) \((3, 5)\)  
B) \((-5, 3)\)  
C) \((-3, 5)\)  
D) \((-5, -3)\)  
E) None of these.

15. A pool measuring 10 meters by 20 meters is surrounded by a path of uniform width. If the area of the pool and the path combined is 600 square meters, find the width of the path.

A) 6 meters 
B) 5 meters 
C) 4 meters 
D) 3 meters 
E) None of these.
16. Find the solution of $7x^2 + 12x + 3 = 0$.

A) \[ \left\{ \frac{-12 \pm \sqrt{15}}{7} \right\} \]

B) \[ \left\{ \frac{-6 \pm \sqrt{57}}{7} \right\} \]

C) \[ \left\{ \frac{-6 \pm \sqrt{15}}{7} \right\} \]

D) \[ \left\{ \frac{-12 \pm \sqrt{15}}{14} \right\} \]

E) \[ \left\{ \frac{-12 \pm \sqrt{57}}{14} \right\} \]

17. Given $f(x) = 2x^2 + 5x - 1$, find the simplified difference quotient: $\lim_{h \to 0} \frac{f(x + h) - f(x)}{h}$.

A) 0

B) $4x + 5$

C) $4x + 2h + 5$

D) $2x^2 + 4xh + 2h^2 + 5x + 5h$

E) None of these.

18. Rationalize the denominator: $\frac{4}{8 - \sqrt{5}}$

A) $\frac{32 - 4\sqrt{5}}{59}$

B) $\frac{32 + 4\sqrt{5}}{59}$

C) $\frac{4 - 4}{8 - \sqrt{5}}$

D) $\frac{32 + 4\sqrt{5}}{3}$

E) $\frac{32 - 4\sqrt{5}}{3}$
19. Find the solution of $|5x - 4| + 6 = -2$.

A) $\{-\frac{4}{5}\}$  
B) $\{\frac{12}{5}, \frac{4}{5}\}$  
C) $\{-\frac{12}{5}, -\frac{4}{5}\}$  
D) $\{\frac{12}{5}\}$  
E) There is no solution.

20. Find the equation of the line through $(4, 5)$ that is parallel to $5x - 4y = 9$.

A) $y = \frac{9}{4}x$  
B) $y = \frac{9}{5}x$  
C) $y = \frac{4}{5}x$  
D) $y = \frac{4}{9}x$  
E) $y = \frac{9}{5}x$

21. Find the domain of $f(x) = \frac{4x}{x^2 - 2}$.

A) All real numbers.  
B) All real numbers except 0.  
C) All real numbers except 2.  
D) All real numbers except 0 and 2.  
E) $(2, 4)$

22. Find the slope of the line through $(5, 3)$ and $(5, 9)$.

A) 0  
B) 6  
C) -6  
D) $\frac{6}{5}$  
E) This line has no slope.

23. Find the distance between the points $(4, -2)$ and $(5, 7)$.

A) 10  
B) 82  
C) $\sqrt{82}$  
D) $\sqrt{10}$  
E) None of these.
24. Find the midpoint of the line segment connecting the points in the previous problem.

A) (9, 5)  
B) (1, 9)  
C) \( \left( \frac{9}{2}, \frac{5}{2} \right) \)  
D) \( \left( \frac{1}{2}, \frac{9}{2} \right) \)  
E) None of these.

25. Find the center of the circle given by \( x^2 + y^2 + 10x - 56 = 0 \).

A) (0, 0)  
B) (0, -5)  
C) (5, 0)  
D) (-5, 0)  
E) (0, 5)

26. Given the graph of \( f \) at right, which of the following graphs is \( f(-x) \)?

A)  
B)  
C)  
D)  
E) 
27. Find the equation of the line passing through (–6, 10) and (0, –5).

A) $15x - 6y = 30$
B) $15x + 6y = 30$
C) $15x - y = -100$
D) $15x + 6y = -30$
E) None of these.

28. You have 600 feet of fencing to enclose a rectangular plot that borders a river. You do not have to fence the side along the river. What is the largest area that can be fenced?

A) 22,500 ft$^2$
B) 40,000 ft$^2$
C) 45,000 ft$^2$
D) 90,000 ft$^2$
E) None of these.

29. Which of the following statements best describes the graph of $f(x) = (x - 2)^2 + 8$?

A) The vertex is (2, 8) and the parabola opens up.
B) The vertex is (2, 8) and the parabola opens down.
C) The vertex is (–2, 8) and the parabola opens up.
D) The vertex is (–2, 8) and the parabola opens down.

30. Which of the following transformations will turn $f(x) = x^3$ into $g(x) = (x - 4)^3$?

A) Shift left 4 units.
B) Shift right 4 units.
C) Shift up 4 units.
D) Shift down 4 units.
E) None of these.

31. The sum of two numbers is 20. Express the product, $P$, of the numbers as a function of one of the numbers, $x$.

A) $P(x) = -x^2 - 20x$
B) $P(x) = -x^2 + 20x$
C) $P(x) = x^2 - 20x$
D) $P(x) = x^2 + 20x$
E) None of these.