

Solve the equation.

1) $5m + 6 + 2(2m - 5) = 5(m + 5)$

A) $\left\{\frac{21}{4}\right\}$

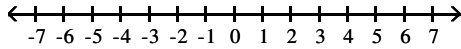
B) $\left\{\frac{29}{4}\right\}$

C) $\left\{\frac{29}{14}\right\}$

D) $\left\{\frac{41}{4}\right\}$

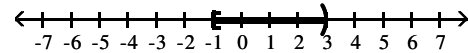
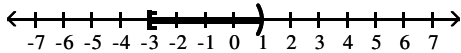
Solve the inequality. Give the solution set in both interval and graph forms.

2) $2 < -3x + 5 \leq 14$



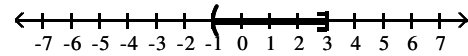
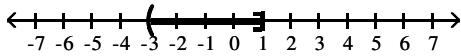
A) $[-3, 1)$

B) $[-1, 3)$



C) $(-3, 1]$

D) $(-1, 3]$



Solve the given equation or inequality. If an equation is given, then write the solution set in set notation. If an inequality is given, then write the solution set in interval notation.

3) $|y + 7| - 1 = 13$

A) $\{14, -14\}$

B) $\{7, -21\}$

C) $\{7\}$

D) $\{9, 20\}$

Complete the table for the equation.

4) $x - 5y = -15$

x	y
-5	
0	
5	

A) 2; 3; 4

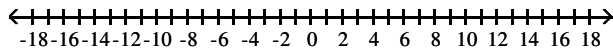
B) 0; -5; -10

C) -2; -3; -4

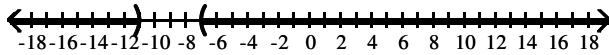
D) 4; 3; 2

Solve the inequality and graph the solution set.

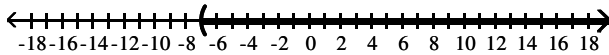
5) $|r + 9| > 2$



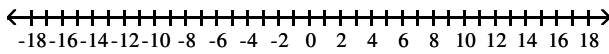
A) $(-\infty, -11) \cup (-7, \infty)$



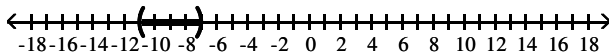
B) $(-7, \infty)$



C) \emptyset



D) $(-11, -7)$



Find the slope of the line through the pair of points.

6) $(1, -4)$ and $(-1, 6)$

A) $\frac{1}{5}$

B) 5

C) -5

D) $-\frac{1}{5}$

Find an equation of the line that satisfies the conditions. Write the equation in standard form.

7) Through $(2, 5)$; $m = -\frac{2}{5}$

A) $2x - 5y = 29$

B) $2x + 5y = -29$

C) $2x + 5y = 29$

D) $5x + 2y = -29$

Decide whether the pair of lines is parallel, perpendicular, or neither.

8) $3x - 2y = 12$ and $2x + 3y = -3$

A) Parallel

B) Perpendicular

C) Neither

Find an equation of the line that satisfies the conditions. Write the equation in standard form.

9) Through $\left(\frac{1}{4}, \frac{2}{3}\right)$; vertical

A) $y = \frac{1}{4}$

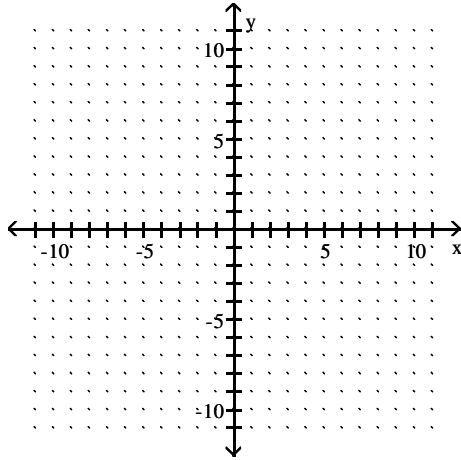
B) $x = \frac{1}{4}$

C) $y = \frac{2}{3}$

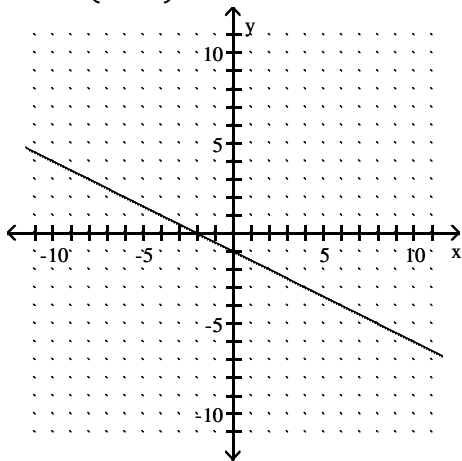
D) $x = \frac{2}{3}$

Find the x- and y-intercepts. Then graph the equation.

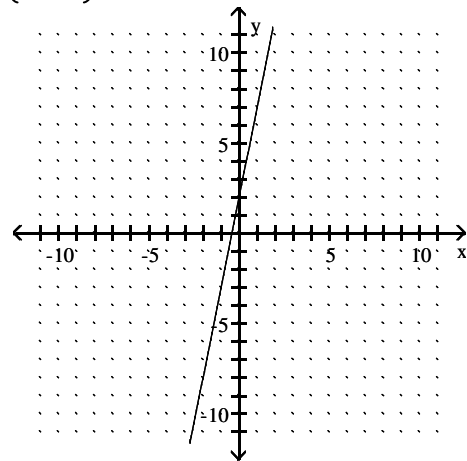
10) $10y - 2x = -4$



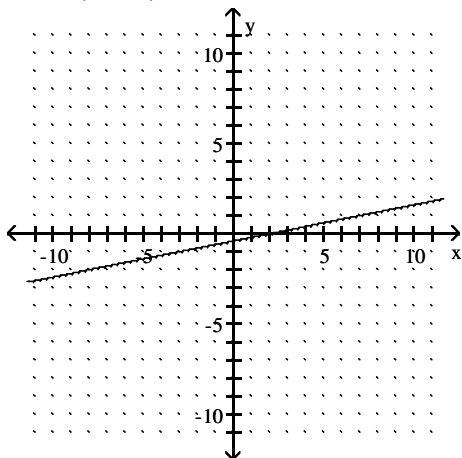
A) $(-2, 0); \left(0, -\frac{2}{5}\right)$



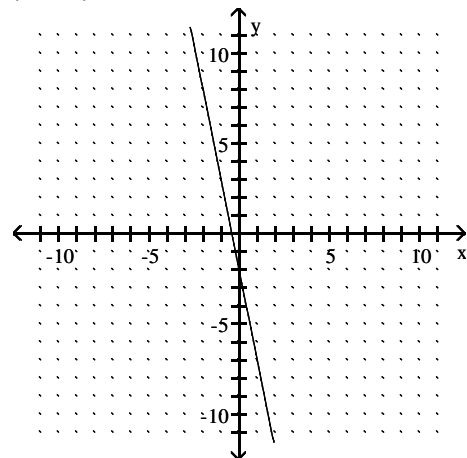
B) $\left(-\frac{2}{5}, 0\right); (0, 2)$



C) $(2, 0); \left(0, -\frac{2}{5}\right)$



D) $\left(-\frac{2}{5}, 0\right); (0, -2)$



Simplify the expression so that no negative exponents appear in the final result. Assume all variables represent nonzero numbers.

11) $(k^{-5})^7 k^4$

A) k^{39}

B) $\frac{1}{k^6}$

C) k^{31}

D) $\frac{1}{k^{31}}$

Express the number in scientific notation.

12) 0.000161

A) 1.61×10^{-5}

B) 1.61×10^{-3}

C) 1.61×10^{-4}

D) 1.61×10^4

Solve the problem.

13) Find $f(4)$ when $f(x) = x^2 + 2x - 7$.

A) 31

B) 15

C) 1

D) 17

Find the product.

14) $(7p + 10)(7p - 10)$

A) $49p^2 - 100$

B) $49p^2 + 140p - 100$

C) $49p^2 - 140p - 100$

D) $p^2 - 100$

Divide.

15) $\frac{-12x^3 + 5x^2 + 45x + 25}{4x + 5}$

A) $-3x^2 + 5$

B) $x^2 + 5x + 5$

C) $-3x^2 + 5x + 5$

D) $x^2 - 5x - 5$

Find the product.

16) $(2m + 5)^2$

A) $2m^2 + 20m + 25$

B) $2m^2 + 25$

C) $4m^2 + 25$

D) $4m^2 + 20m + 25$

Factor the polynomial completely.

17) $9x^4 + 24x^2 + 16$

A) $(3x^2 - 4)(3x^2 - 4)$

B) $(3x^2 + 1)(3x^2 + 16)$

C) $(9x^2 + 4)(x^2 + 4)$

D) $(3x^2 + 4)^2$

18) $10a^3 - 4a^2b + 25ab^2 - 10b^3$

A) $(2a^2 + 5b^2)(5a - 2b)$

B) $(10a^2 + 5b^2)(a - 2b)$

C) $(2a^2 - 5b^2)(5a + 2b)$

D) $(2a^2 + 5b)(5a - 2b)$

19) $1000p^3 - 1$

A) $(10p - 1)(100p^2 + 10p + 1)$

C) $(10p + 1)(100p^2 - 10p + 1)$

B) $(10p - 1)(100p^2 + 1)$

D) $(1000p - 1)(p^2 + 10p + 1)$

Find all solutions by factoring.

20) $(2x + 7)(x + 1) = 28x - 2$

A) $\left\{\frac{1}{13}, -1\right\}$

B) $\left\{\frac{2}{27}, \frac{1}{13}\right\}$

C) $\left\{-\frac{7}{2}, \frac{1}{14}, -1\right\}$

D) $\left\{\frac{1}{2}, 9\right\}$

Find the domain of the rational function.

21) $g(c) = \frac{2c + 18}{9c^2 + 2c - 7}$

A) $\left\{c \mid c \neq -\frac{7}{9}, 1\right\}$

B) $\left\{c \mid c \neq \frac{9}{7}, -1\right\}$

C) $\left\{c \mid c \neq \frac{7}{9}, -1\right\}$

D) $\left\{c \mid c \neq -9, -1, \frac{7}{9}\right\}$

Perform the indicated operation and express in lowest terms.

22) $\frac{k^2 + 5k + 6}{k^2 + 6k + 8} \cdot \frac{k^2 + 4k}{k^2 + 12k + 27}$

A) $\frac{k}{k^2 + 6k + 8}$

B) $\frac{k^2 + 4k}{k + 9}$

C) $\frac{k}{k + 9}$

D) $\frac{1}{k + 9}$

Add or subtract as indicated. Write the answer in lowest terms.

23) $\frac{x}{x^2 - 16} - \frac{4}{x^2 + 5x + 4}$

A) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)}$

B) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)(x + 1)}$

C) $\frac{x^2 - 3}{(x - 4)(x + 4)(x + 1)}$

D) $\frac{x^2 + 3x + 16}{(x - 4)(x + 4)(x + 1)}$

Simplify the complex fraction.

24) $\frac{\frac{1}{a} + 1}{\frac{1}{a} - 1}$

A) 1

B) $1 - a^2$

C) $\frac{1 + a}{1 - a}$

D) $\frac{a}{1 - a^2}$

Solve the equation.

25) $\frac{1}{5x} + \frac{1}{2x} = -\frac{1}{10}$

- A) $\{-7\}$ B) $\{7\}$ C) \emptyset D) $\{-8\}$

Solve the system by elimination. If the system is inconsistent or has dependent equations, say so.

26) $-x - 3y = -20$
 $-4x + 3y = -20$

- A) $\{(8, 4)\}$ B) $\{(-4, 8)\}$
 C) $\{(9, 3)\}$ D) \emptyset ; inconsistent system

Simplify the expression involving rational exponents.

27) $8^{4/3}$

- A) 64 B) 128 C) 16 D) 32

Express the radical in simplified form. Assume that all variables represent positive real numbers.

28) $\sqrt{98x^2}$

- A) $98x$ B) $7\sqrt{2x}$ C) $7x$ D) $7x\sqrt{2}$

Simplify. Assume that all variables represent positive real numbers.

29) $\sqrt{2x} + 2\sqrt{32x} + 8\sqrt{72x}$

- A) $56\sqrt{2x}$ B) $11\sqrt{106x}$ C) $57\sqrt{2x}$ D) $10\sqrt{106x}$

Multiply, then simplify the product. Assume that all variables represent positive real numbers.

30) $(\sqrt{3x} - 4)(\sqrt{5x} - 3)$

- A) $x\sqrt{15} + 12$ B) $x\sqrt{15} - 3\sqrt{3x} - 4\sqrt{5x} + 12$
 C) $x\sqrt{15} + \sqrt{5x} + 12$ D) $x\sqrt{5} + 12$

Rationalize the denominator. Assume that all variables represent positive real numbers and that the denominator is not zero.

31) $\frac{\sqrt{3}}{\sqrt{7} + 2}$

- A) $\frac{\sqrt{21} - 2\sqrt{3}}{3}$ B) $\frac{\sqrt{21} + 2\sqrt{3}}{3}$ C) $\frac{3\sqrt{21} + 73}{14}$ D) $\frac{\sqrt{21} - 2\sqrt{3}}{9}$

Solve the equation.

32) $\sqrt{7x - 9} - 8 = 0$

- A) $\left\{\frac{17}{7}\right\}$ B) {64} C) \emptyset D) $\left\{\frac{73}{7}\right\}$

Add or subtract as indicated. Write your answer in the form a + bi.

33) $[(1 + 10i) - (9 + 7i)] - (6 - 2i)$

- A) $-14 + 15i$ B) $-14 + 5i$ C) $16 + 5i$ D) $16 + 15i$

Multiply.

34) $(3 + 5i)(3 + 2i)$

- A) $-1 - 21i$ B) $-1 + 21i$ C) $10i^2 + 21i + 9$ D) $19 + 9i$

Use the quadratic formula to solve the equation. (All solutions are real numbers.)

35) $3x(x + 5) = 2$

- A) $\left\{\frac{15 + \sqrt{249}}{6}, \frac{15 - \sqrt{249}}{6}\right\}$ B) {1}
- C) $\left\{\frac{-15 + \sqrt{249}}{6}, \frac{-15 - \sqrt{249}}{6}\right\}$ D) $\left\{-\frac{3}{5}\right\}$

Solve the equation.

36) $1 - \frac{2}{x} - \frac{35}{x^2} = 0$

- A) $\{-7, -5\}$ B) $\{7, 5\}$ C) $\{7, -5\}$ D) $\{-7, 5\}$

Identify the vertex of the given parabola.

37) $f(x) = (x - 4)^2 - 4$

- A) (4, -4) B) (0, -4) C) (4, 4) D) (-4, 0)

Solve the equation.

38) $3^x = 27$

- A) {2} B) {9} C) {3} D) {4}

Write in logarithmic form.

39) $3^2 = 9$

- A) $\log_9 3 = 2$ B) $\log_3 2 = 9$ C) $\log_2 9 = 3$ D) $\log_3 9 = 2$

Write in exponential form.

40) $\log_4 64 = 3$

A) $4^3 = 64$

B) $64^3 = 4$

C) $4^{64} = 3$

D) $3^4 = 64$