

Write the equation of a line that passes through the given point.

1.) (0,3) $m=5$

2.) (1,2) $m=0$

3.) (3,1) $m=4$

Write an equation of the lines that passes through the given points.

4.) (2,1) (3,-7)

5.) (2,0) (2,1)

6.) (-1,4) (2,16)

Simplify the expression.

7.) $\frac{5x^2y}{2x^{-1}y^3}$

8.) $\frac{(3x)^2y}{6x^5}$

9.) $\frac{5^{-2}x^{-5}y^{-1}}{3x^{-2}y^{-3}}$

10.) $\frac{(-2x^{-2}y^{-3})(3x^4y^3)}{-12x^{-4}y}$

11.) $(3x)^2y \cdot 3x^{-2}y^{-3}$

Find the sum, difference, or product.

12.) $(x-3)(x^2+3x+2)$

13.) $(4x^3-2x) + (3x^2-3x+1)$

14.) $(2x-1)^3$

15.) $(4x^5+3x^4-5x+1) - (2x^5+x^2-3)$

Factor the following.

16.) $6x^2-3x-3$

17.) $6x^2+3x-30$

18.) $648x^3-3$

Please solve the following system of equations.

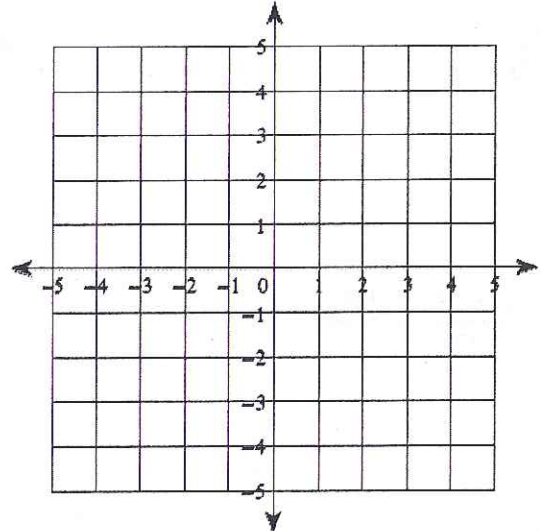
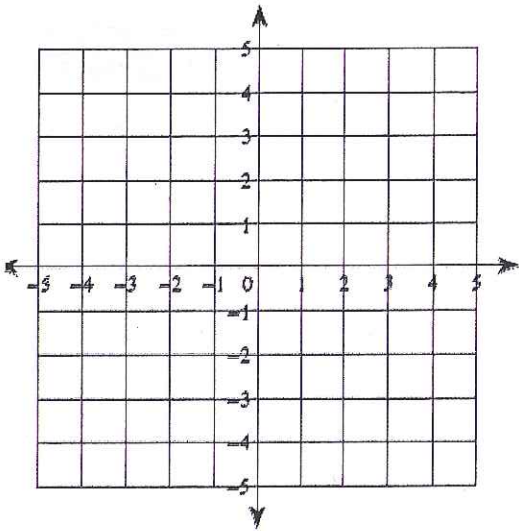
19.) $-7x + y = -19$
 $-2x + 3y = -19$

20.) $3x - 2y = 2$
 $5x - 5y = 10$

Please solve the following system of inequalities.

21.) $x + y \geq 2$
 $4x + y \geq -1$

22.) $4x + 3y > -6$
 $x - 3y \leq -9$



Please solve the following absolute value equations or inequalities.

23.) $2|x - 4| - 3 = 7$

24.) $|x - 5| - 9 \leq 7$

25.) $3|x - 2| - 9 > 9$

26.) $-2|x - 4| = -24$

Write the equation of a line that passes through the given point.

$y = mx + b$

(0,3) $m=5$
x y

$3 = 0 + b$
 $b = 3$
 $y = 5x + 3$

2.) (1,2) $m=0$

$2 = 0 + b$
 $b = 2$
 $y = 0x + 2 \rightarrow y = 2$

3.) (3,1) $m=4$

$1 = 3(4) + b$
 $b = -11$
 $y = 4x - 11$

Write an equation of the lines that passes through the given points.

4.) (2,1) (3,-7)

$m = \frac{-7-1}{3-2} = \frac{-8}{1} = -8$
 $1 = 2(-8) + b \rightarrow b = 17$
 $y = -8x + 17$

5.) (2,0) (2,1)

$m = \frac{1-0}{2-2} = \frac{1}{0} = \text{undef.}$
 $x = 2$

6.) (-1,4) (2,16)

$4 = 4(-1) + b$
 $b = 8$
 $m = \frac{16-4}{2-(-1)} = \frac{12}{3} = 4$
 $y = 4x + 8$

Simplify the expression.

7.) $\frac{5x^2y}{2x^{-1}y^3}$

$\frac{5x^3}{2y^2}$

8.) $\frac{(3x)^2y}{6x^5}$

$\frac{9x^2y}{6x^5} \rightarrow \frac{3y}{2x^3}$

9.) $\frac{5^{-2}x^{-5}y^{-1}}{3x^{-2}y^{-3}}$

$\frac{x^2y^3}{25 \cdot 3x^5y} = \frac{y^2}{75x^3}$

10.) $\frac{(-2x^{-2}y^{-3})(3x^4y^3)}{-12x^{-4}y} = \frac{-6x^2 \cdot x^4}{-12y}$

$\frac{x^6}{2y}$

11.) $(3x)^2y \cdot 3x^{-2}y^{-3}$

$9x^2y \cdot 3x^{-2}y^{-3}$
 $27x^0y^{-2} = \frac{27}{y^2}$

Find the sum, difference, or product.

12.) $(x-3)(x^2+3x+2)$

$x^3 + 3x^2 + 2x - 3x^2 - 9x - 6$
 $x^3 - 7x - 6$

13.) $(4x^3 - 2x) + (3x^2 - 3x + 1)$

$4x^3 + 3x^2 - 5x + 1$

14.) $(2x-1)^3$

$(2x-1)(2x-1)(2x-1)$
 $(4x^2 - 4x + 1)(2x-1)$
 $8x^3 - 4x^2 - 8x^2 + 4x + 2x - 1$
 $8x^3 - 12x^2 + 6x - 1$

15.) $(4x^5 + 3x^4 - 5x + 1) - (2x^5 + x^2 - 3)$

$4x^5 + 3x^4 - 5x + 1 - 2x^5 - x^2 + 3$

$2x^5 + 3x^4 - x^2 - 5x + 4$

Factor the following.

16.) $6x^2 - 3x - 3$

$3(2x^2 - x - 1)$
 $3(2x^2 - 2x + x - 1)$
 $3(2x(x-1) + 1(x-1))$
 $3(x-1)(2x+1)$

17.) $6x^2 + 3x - 30$

$3(2x^2 + x - 10)$
 $3(2x^2 + 5x - 4x - 10)$
 $x(2x+5) - 2(2x+5)$
 $3(2x+5)(x-2)$

18.) $648x^3 - 3$

$3(216x^3 - 1)$
 $3(6x-1)(36x^2+6x+1)$

Please solve the following system of equations.

$$\begin{aligned} 19.) \quad & -7x + y = -19 \\ & -2x + 3y = -19 \\ & \underline{21x - 3y = 57} \\ & 19x = 38 \\ & x = 2 \end{aligned}$$

$$\begin{aligned} & -7(2) + y = -19 \\ & -14 + y = -19 \\ & y = -5 \end{aligned}$$

$(2, -5)$ ✓

$$\begin{aligned} 20.) \quad & 3x - 2y = 2 \\ & 5x - 5y = 10 \\ & 3(-2) - 2y = 2 \\ & -6 - 2y = 2 \\ & -2y = 8 \\ & y = -4 \end{aligned}$$

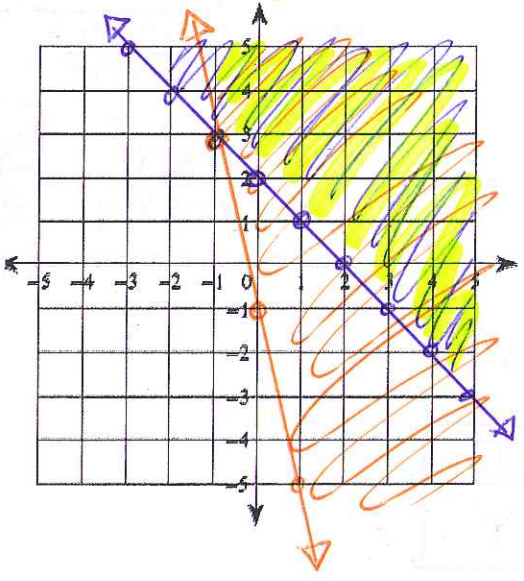
$$\begin{aligned} -5(3x - 2y = 2) & \rightarrow -15x + 10y = -10 \\ 2(5x - 5y = 10) & \rightarrow 10x - 10y = 20 \\ \hline & -5x = 10 \\ & x = -2 \end{aligned}$$

$(-2, -4)$

Please solve the following system of inequalities.

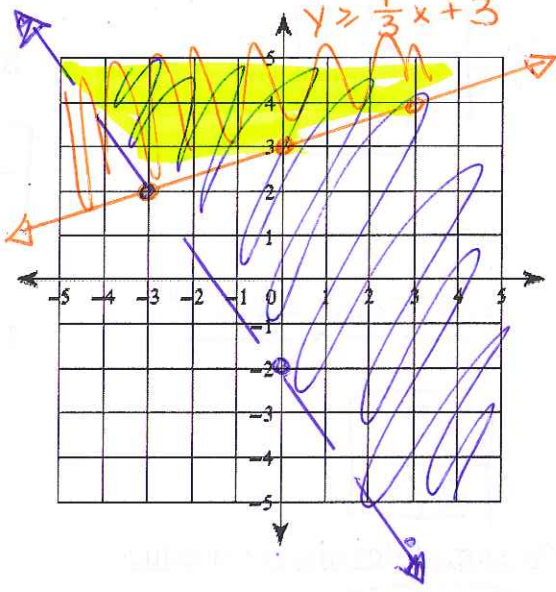
$$\begin{aligned} 21.) \quad & x + y \geq 2 \\ & 4x + y \geq -1 \end{aligned}$$

$$\begin{aligned} & y \geq -x + 2 \\ & y \geq -4x - 1 \end{aligned}$$



$$\begin{aligned} 22.) \quad & 4x + 3y > -6 \\ & x - 3y \leq -9 \end{aligned}$$

$$\begin{aligned} & 3y > -4x - 6 \\ & y > -\frac{4}{3}x - 2 \\ & -3y \leq -x - 9 \\ & y \geq \frac{1}{3}x + 3 \end{aligned}$$



Please solve the following absolute value equations or inequalities.

$$\begin{aligned} 23.) \quad & 2|x - 4| - 3 = 7 \\ & 2|x - 4| = 10 \\ & |x - 4| = 5 \\ & \wedge \\ & x - 4 = 5 \quad x - 4 = -5 \\ & x = 9 \quad x = -1 \end{aligned}$$

$$\begin{aligned} 24.) \quad & |x - 5| - 9 \leq 7 \\ & |x - 5| \leq 16 \\ & -16 \leq x - 5 \leq 16 \\ & -11 \leq x \leq 21 \end{aligned}$$

$$\begin{aligned} 25.) \quad & 3|x - 2| - 9 > 9 \\ & 3|x - 2| > 18 \\ & |x - 2| > 6 \\ & x - 2 > 6 \quad \text{or} \quad x - 2 < -6 \\ & x > 8 \quad \text{or} \quad x < -4 \end{aligned}$$

$$\begin{aligned} 26.) \quad & -2|x - 4| = -24 \\ & |x - 4| = 12 \\ & x - 4 = 12 \quad x - 4 = -12 \\ & x = 16 \quad x = -8 \end{aligned}$$