

Homework 25.1

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Simplify. Your answer should contain only positive exponents.

$$1) 2k^0 \cdot 3k^{-3} = 2 \cdot 3 k^{-3} \\ = 6k^{-3} = \frac{6}{k^3}$$

$$2) 3p^{-3} \cdot 4p^{-4} = 12p^{-3-4} = 12p^{-7} = \frac{12}{p^7}$$

$$3) 3a^2 \cdot 3a^0 = 9a^{2+0} = 9a^2$$

$$4) 4x^3 \cdot 3x^4 = 12x^{3+4} = 12x^7$$

$$5) -4b^2 \cdot 3a^4b^{-4} = -12a^4b^{2-4} \\ = -12a^4b^{-2} = \frac{-12a^4}{b^2}$$

$$6) 3xy^{-4} \cdot -y^4 = -3xy^{-4+4} \\ = -3xy^0 = -3x$$

$$7) (4b)^2 = 4^2b^2 = 16b^2$$

$$8) (n^3)^2 = n^{3 \cdot 2} = n^6$$

$$9) (x^{-3})^{-1} = x^3$$

$$10) (3v^2)^{-1} = 3^{-1}v^{-2} = \frac{1}{3v^2}$$

$$11) uv^3 \cdot (2v^3)^3 = u^1v^3 \cdot 2^3v^9 \\ = 8u^1v^{3+9} = 8uv^{12}$$

$$12) (2x^{-3}y^4)^2 \cdot x^{-4} = 2^2 \cdot x^{-6} \cdot y^8 \cdot x^{-4} \\ = 4x^{-6-4}y^8 = 4x^{-10}y^8 = \frac{4y^8}{x^{10}}$$

$$13) \frac{4yx^{-1}}{x^{-3}y^0} = \frac{4}{1} \cdot \frac{x^{-1}}{x^{-3}} \cdot \frac{y}{y^0} \\ = \frac{4}{1} \cdot \frac{x^2}{1} \cdot \frac{y}{1} = 4x^2y$$

$$14) \frac{3x^{-4}y^{-4}}{x^{-4}y^2} = \frac{3}{1} \cdot \frac{x^{-4}}{x^{-4}} \cdot \frac{y^{-4}}{y^2} \\ = \frac{3}{1} \cdot (1) \cdot \frac{1}{y^6} = \frac{3}{y^6}$$

$$15) \frac{3nm^{-2}}{mn} = \frac{3}{1} \cdot \frac{n}{n} \cdot \frac{m^{-2}}{m^1} \\ = \frac{3}{1} \cdot (1) \cdot \frac{1}{m^3} = \frac{3}{m^3}$$

$$16) \frac{3x^{-2}y^0}{4xy^3} = \frac{3}{4} \cdot \frac{x^{-2}}{x^1} \cdot \frac{y^0}{y^3} \\ = \frac{3}{4} \cdot \frac{1}{x^3} \cdot \frac{1}{y^3} = \frac{3}{4x^3y^3}$$

Solve for $y = mx + b$, and state the slope and the y -intercept.

$$17) \begin{array}{r} 3x - 7y = 49 \\ -3x \quad -3x \\ \hline -7y = -3x + 49 \\ \frac{-7y}{-7} = \frac{-3x}{-7} + \frac{49}{-7} \\ y = \frac{3}{7}x - 7 \\ y = mx + b \end{array}$$

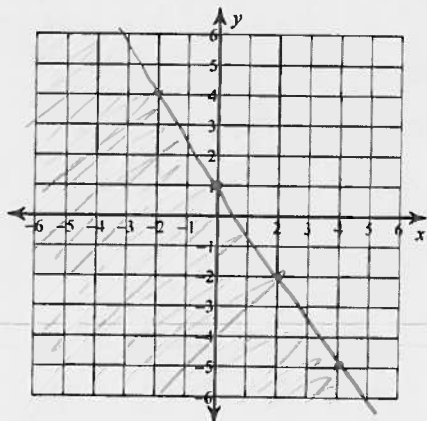
$$m = \frac{3}{7} \\ b = -7 \\ x = \frac{49}{3}$$

18) $y = 7$

Horizontal line:
 $m = 0$
 $y\text{-int} \rightarrow 7$
 $y = 0x + 7$

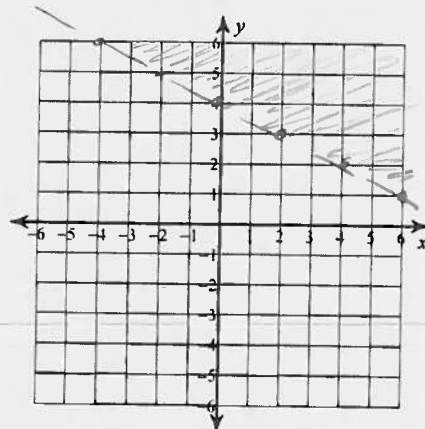
Sketch the graph of each linear inequality.

19) $y \leq -\frac{3}{2}x + 1$



$m = -\frac{3}{2}$
 $b = 1$
Solid
below

20) $y > -\frac{1}{2}x + 4$



$M = -\frac{1}{2}$
 $b = 4$
dashed
above

Answers to Homework 25.1

1) $\frac{6}{k^3}$

2) $\frac{12}{p^7}$

3) $9a^2$

4) $12x^7$

5) $-\frac{12a^4}{b^2}$

6) $-3x$

7) $16b^2$

8) n^6

9) x^3

10) $\frac{1}{3v^2}$

11) $8uv^{12}$

12) $\frac{4y^8}{x^{10}}$

13) $4yx^2$

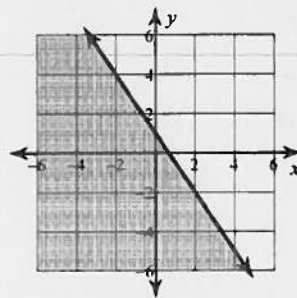
14) $\frac{3}{y^6}$

15) $\frac{3}{m^3}$

16) $\frac{3}{4x^3y^3}$

17) $y = \frac{3}{7}x - 7, m = \frac{3}{7}, b = -7$

18) $y = 7, m = 0, b = 7$ 19)



20)

