

Name: KEYRead all directions and problems carefully! Show all appropriate work for credit.

1. Simplify the following using the laws of exponents.

$$y^2 \cdot y^5 \cdot y^4 = \boxed{y^{11}}$$

$$(6x^7y^5)(-4x^3y) = \boxed{-24x^{10}y^6}$$

$$(-2y^8)^3 = \boxed{-8y^{24}}$$

$$(ab^3)^4(ab^3)^5 = \boxed{a^9b^{27}}$$

$$(2a^6b^2)^3(-3a^3b^5)^2 = \boxed{72a^{24}b^{16}}$$

2. Simplify each of the following. Leave answers in exponential form with positive exponents only.

$$\frac{-48x^{14}}{-8x^6} = \boxed{6x^8}$$

$$\frac{a^{14}}{a^{23}} = a^{-9} = \boxed{\frac{1}{a^9}}$$

$$(8m^3n^2)^0 = \boxed{1}$$

$$b^{-15} \cdot b^{-8} = \boxed{\frac{1}{b^{23}}}$$

$$\frac{m^{-7}}{m^{-16}} = \boxed{m^9}$$

$$\left(\frac{x}{2y}\right)^3 = \boxed{\frac{x^3}{2^3y^3}}$$

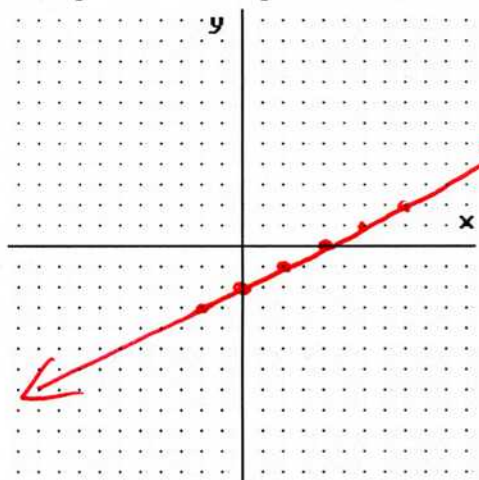
$$\left(\frac{3a^{-4}}{b^5}\right)^{-2} = \boxed{\frac{a^8b^{10}}{9}}$$

$$(-2x^4z^{-6})^{-3} = \boxed{\frac{z^{18}}{-8x^{12}}}$$

$$\frac{(5m^3)(-7m^6)}{(m^{10})(m^5)} = \boxed{\frac{-35m^9}{m^{15}}}$$

$$\frac{(2y^{-6})^2(3y^{-5})^{-3}}{(y^4)^{-3}} = \boxed{\frac{4y^{15}}{27}}$$

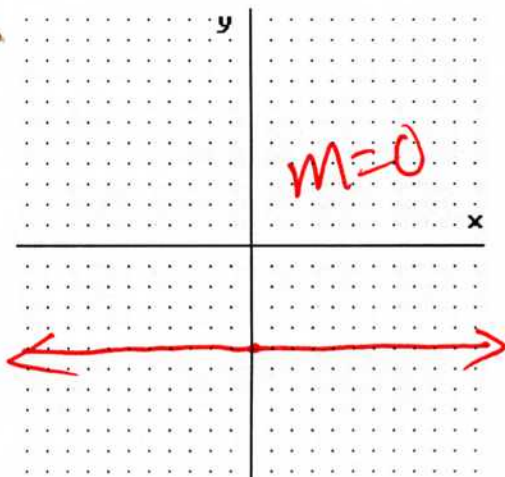
3. Find the x - and y -intercepts of the line $-3x+6y=-12$. Find three other solutions to the equation. Graph the line on the axes provided.



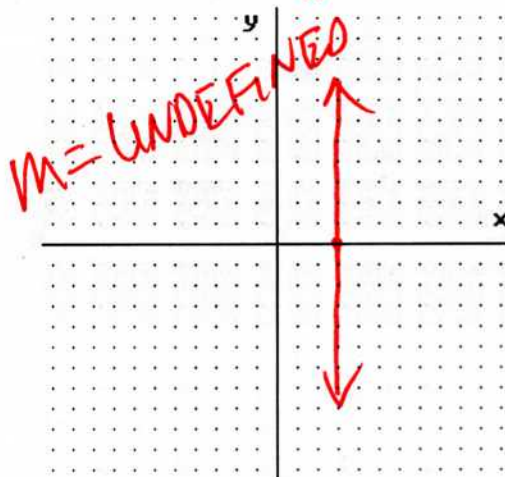
$$\begin{aligned}
 & X\text{-INT: } y=0 & Y\text{-INT: } x=0 \\
 & -3x+6(0)=-12 & -3(0)+6y=-12 \\
 & \cancel{+3}x = \frac{-12}{\cancel{-3}} & \frac{6y}{\cancel{6}} = \frac{-12}{\cancel{6}} \\
 & (4, 0) \quad x=4 & (0, -2) \quad y=-2 \\
 & (2, -1); (6, 1); (8, 2); (-2, -3)
 \end{aligned}$$

4. Graph the lines of the following equations on the axes provided and state the slope of each line.

$$y = -5$$



$$x - 3 = 0 \Rightarrow x = 3$$



5. Find the slope of the line containing each given pair of points.

$$(4, 5); (3, 1)$$

$$\begin{aligned}
 & x_2, y_2 \quad x_1, y_1 \\
 & m = \frac{y_2 - y_1}{x_2 - x_1} \\
 & = \frac{5 - 1}{4 - 3} \\
 & m = \frac{4}{1} = \boxed{4}
 \end{aligned}$$

$$(-1, 6); (5, -2)$$

$$\begin{aligned}
 & m = \frac{6 - (-2)}{-1 - 5} \\
 & = \frac{6 + 2}{-6} \\
 & m = \frac{8}{-6} = \boxed{\frac{4}{3}}
 \end{aligned}$$

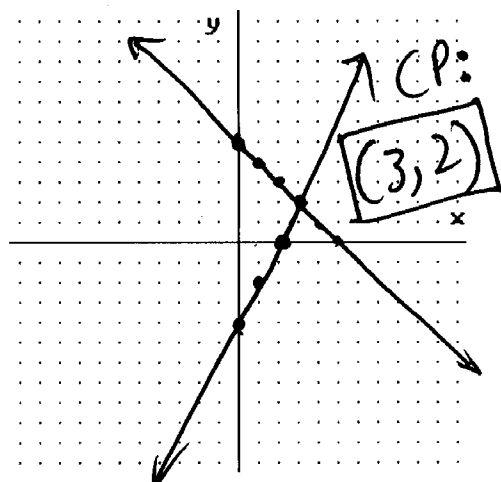
$$(4, 7); (4, -3)$$

$$\begin{aligned}
 & m = \frac{7 - (-3)}{4 - 4} \\
 & m = \frac{10}{0} \\
 & \boxed{m = \text{UNDEFINED}}
 \end{aligned}$$

6. Solve the following system (find the ordered pair) of linear equations in two variables

by graphing.

$$\begin{cases} 2x - y = 4 \\ x + y = 5 \end{cases}$$



$$2x - y = 4$$

$$\frac{+y}{-1} = \frac{-2x+4}{-1}$$

$$y = -x + 5$$

$$m = -1; (0, 5)$$

$$y = 2x - 4$$

$$m = 2; (0, -4)$$

7. Solve the following system (find the ordered pair) of linear equations in two variables using the Elimination Method.

$$\begin{cases} -3(3x + y) \cdot (-3) \\ 9x + 3y = 6 \end{cases}$$

$$\begin{cases} -9x - 3y = -9 \\ 9x + 3y = 6 \end{cases}$$

$$0 \neq -3$$

NO SOLUTION
LINES ARE PARALLEL

8. Solve the following system (find the ordered pair) of linear equations in two variables using the Substitution Method.

$$\begin{cases} x - 3y = 2 \\ -2x + y = 6 \end{cases} \rightarrow x = 3y + 2$$

$$-2(3y + 2) + y = 6$$

$$-6y - 4 + y = 6$$

$$-5y - 4 = 6$$

$$+4 \quad +4$$

$$-5y = 10$$

$$\frac{-5y}{-5} = \frac{10}{-5}$$

$$y = -2$$

$$x = 3(-2) + 2$$

$$= -6 + 2$$

$$= -4$$

CROSSING POINT
 $(-4, -2)$