Simplify.

$$\sqrt[3]{27x^6} = \sqrt[3]{27} \cdot \sqrt[3]{x^6} \quad \leftarrow \text{by } 3$$

$$= \sqrt[3]{3^3} \cdot \sqrt[3]{(x^2)^3}$$

$$= 3x^2 \quad \leftarrow \text{by } 1$$

Divide.

$$\frac{6a+6}{2a-12} \div \frac{a^2-1}{a^2-2a-24} = \frac{\overbrace{(6a+6)}^{6(a+1)}\overbrace{(a^2-2a-24)}^{(a-6)(a+4)}}{\underbrace{(2a-12)}_{2(a-6)}\underbrace{(a^2-1)}_{(a-1)(a+1)}}$$

$$= \frac{\overset{3}{\cancel{6}}(\cancel{a+1})(\cancel{a-6})(a+4)}{\cancel{2}(\cancel{a-6})(a-1)(\cancel{a+1})}$$

$$= \frac{3(a+4)}{a-1} = \boxed{\frac{3a+12}{a-1}}$$

Find an equation of the line that contains the following pair of points.

(5,1) and (3,4)

Equation of a line:

$y - y_0 = m(x - x_0)$ where (x_0, y_0) is either of (5,1), (3,4) (doesn't matter which)

and $m = \frac{y_2 - y_1}{x_2 - x_1}$ = slope.

Again, it doesn't matter which point is (x_1, y_1) and which is (x_2, y_2).

$$y - 1 = \left(\frac{4-1}{3-5}\right)(x-5)$$

$$\boxed{y - 1 = -\frac{3}{2}(x-5)}$$ ← faster to write

OR $y = -\frac{3}{2}x + \frac{15}{2} + 1$

$$\boxed{y = -\frac{3}{2}x + \frac{17}{2}}$$ ← useful for graphing by hand

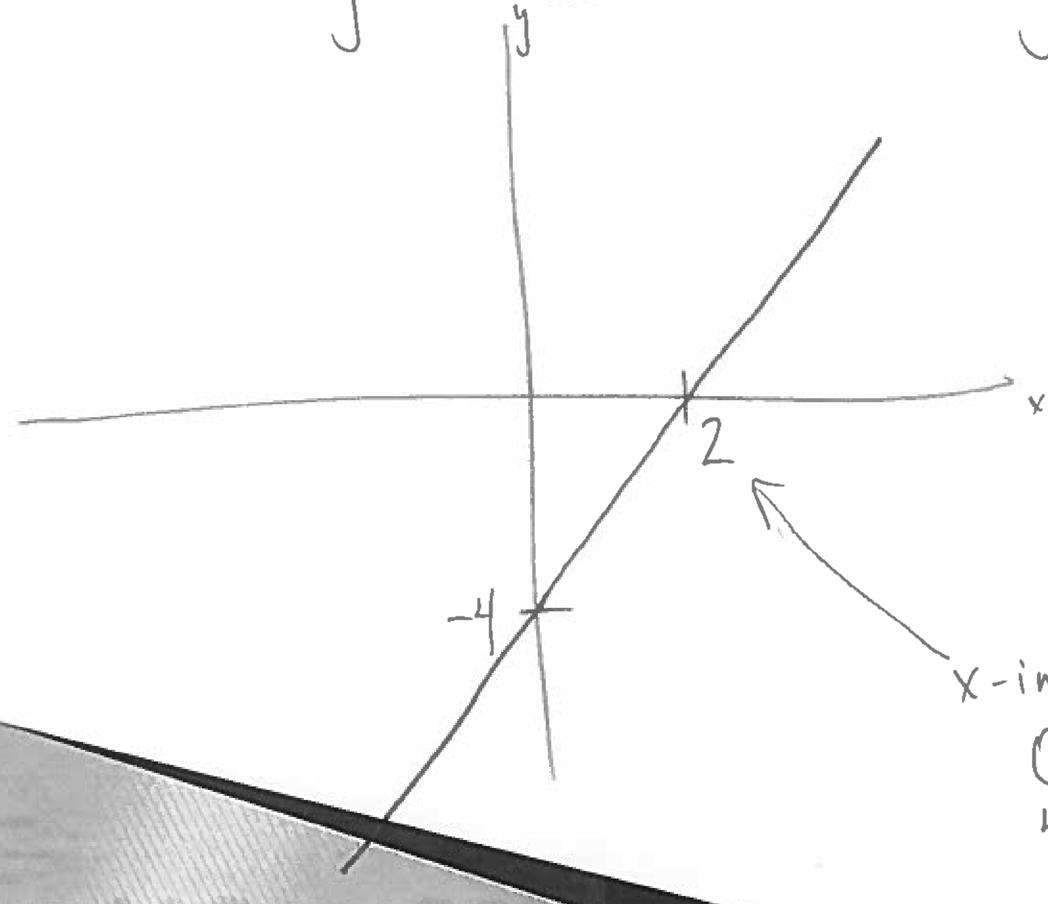
Graph the linear equation.

$4x - 2y = 8$

$4x - 8 = 2y$

y-intercept

$\Rightarrow y = 2x - 4$ (Solve for y first)



When graphing a line: label the y-intercept and the x-intercept first, then connect them.

x-intercept is when $y=0$:

$0 = 2x - 4$

$4 = 2x \Rightarrow x = 2$

Find the domain of the function.

$$f(x) = \frac{10}{x^2 - 25} = \frac{10}{(x-5)(x+5)}$$

$$\boxed{x \neq \pm 5}$$