

Warm-up

Simplify:

$$\textcircled{1} \quad \frac{4x^8}{2x^{12}}$$

$$\textcircled{2} \quad \frac{12x^2+4x-1}{36x^2-12x+1} \cdot \frac{x^2-64}{2x^2+17x+8}$$

$$\textcircled{3} \quad \frac{2x^2-10x}{x^2-4} \div \frac{x^2-5x}{x^2-4x-12}$$

$$\textcircled{1} \quad \frac{4x^8}{2x^{12}} = \boxed{\frac{2}{x^4}}$$

$$\textcircled{2} \quad \frac{(6x-1)(2x+1)}{(36x^2-12x+1)} \cdot \frac{(x-8)(x+8)}{(2x^2+17x+8)}$$

$$(6x-1)(6x-1) \quad (2x+1)(x+8)$$

$$= \boxed{\frac{x-8}{6x-1}}$$

$$\textcircled{3} \quad \frac{2x(x-5)}{(x^2-4)} \cdot \frac{(x-6)(x+2)}{x^2-5x}$$

$$\frac{(x-2)(x+2)}{(x-2)(x+5)} \quad x(x-5)$$

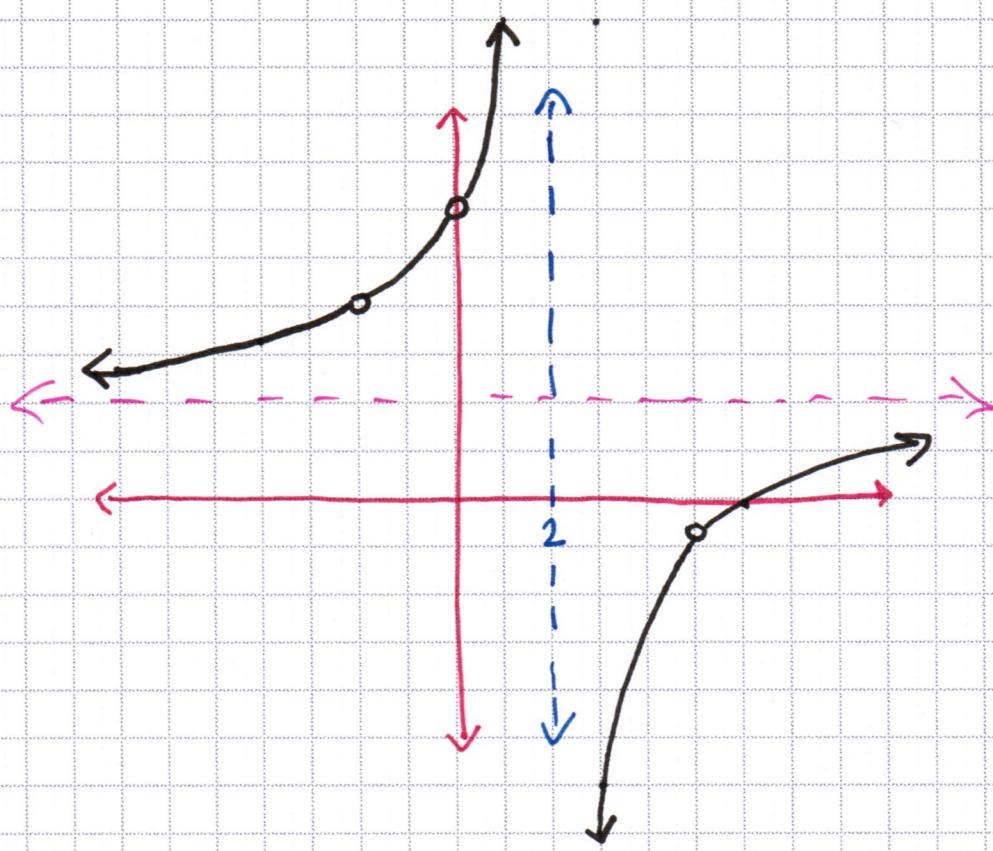
$$= \boxed{\frac{2(x-6)}{x-2}} \quad \text{for } x \neq -2, 2, 0, 5$$

What graph would look like:

Factored form of problem

$$\frac{2x(x-5)(x-6)(x+2)}{(x-2)(x+2)(x)(x-5)}$$

Answer: $\frac{2(x-6)}{x-2}$ for $x \neq -2, 0, 2, 5$



TABLE

x	y
-4	3.3
-3	3.6
-2	error
-1	4.6
0	error
1	10
2	error
3	-6
4	-2
5	error
6	0

$$\frac{2(x-6)}{x-2}$$

$$\frac{x}{x}$$

$$\frac{x-5}{x-5}$$

$$\frac{x+2}{x+2}$$

Answer
zero
is
asy.

$$x=2$$

hole $(0, 6)$

$$\text{zero} = 0$$

$$\frac{2(0-6)}{0-2}$$

$$\frac{2(-6)}{-2} = \frac{-12}{-2} = 6$$

hole $(5, -\frac{2}{3})$

$$\text{zero} = 5$$

$$\frac{2(5-6)}{5-2}$$

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

hole $(-2, 4)$

$$\text{zero} = -2$$

$$\frac{2(-2-6)}{-2-2}$$

$$\frac{2(-8)}{-4} = 4$$

Equations with fractions and/or decimals can be converted into equivalent equations without fractions and/or decimals and then solved in the usual manner. Equations can also be made simpler by dividing a common numerical factor out of each term.

Example 1

$$\text{Solve: } 0.12x + 7.5 = 0.2x + 3$$

Multiply to remove the decimals.

$$\begin{aligned}100 \cdot (0.12x + 7.5) &= 100 \cdot (0.2x + 3) \\12x + 750 &= 20x + 300\end{aligned}$$

Solve in the usual manner.

$$\begin{aligned}-8x &= -450 \\x &= 56.25\end{aligned}$$

Example 2

$$\text{Solve: } 25x^2 + 125x + 150 = 0$$

Divide each term by 25 (a common factor).

$$x^2 + 5x + 6 = 0$$

Solve in the usual manner.

$$\begin{aligned}(x + 2)(x + 3) &= 0 \\x = -2 \text{ or } x &= -3\end{aligned}$$