

Review — Rational Functions

1. y varies jointly as w and x and inversely as z . If $y = -2$ when $x = 3$, $w = 2$, and $z = -9$,

Find the constant of variation, the variation equation and find y when $x = 4$, $w = -3$, and $z = -6$:

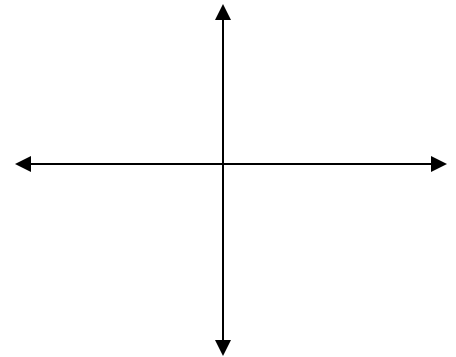
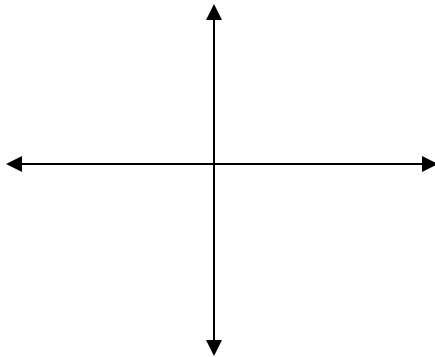
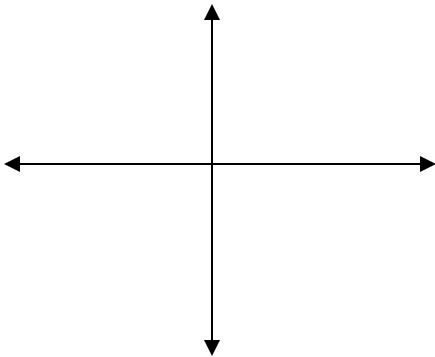
2. The number of minutes needed to solve an exercise set of variation problems varies directly as the number of problems and inversely as the number of people working on the solutions. It takes 4 people 36 minutes to solve 18 problems. How many minutes will it take 6 people to solve 42 problems?

Graph each rational function. Label all holes, asymptotes x-intercepts and y-intercepts.

3) $f(x) = \frac{2x-2}{2x+2}$

4) $f(x) = \frac{3x-1}{3x^2-36}$

5) $f(x) = \frac{x+x^2}{x^2-1}$



Perform the indicated operation.

6) $\frac{x^2-9}{x^2-4x+4} \cdot \frac{x^2-4}{x^2-x-6}$

7) $2xy \div \frac{2x^2}{y} \div \frac{2y^3}{x}$

8) $\frac{\frac{(x+y)^2}{(x+y)^3}}{\frac{x+y}{x^2+2xy+y^2}}$

Perform the indicated operation.

$$9) \frac{1}{1 + \frac{1}{x}} + \frac{1}{1 - \frac{1}{x}}$$

$$10) \frac{\frac{x+2}{x+5}}{\frac{x-1}{x+5}} + \frac{1}{x+1}$$

$$11) \frac{7x}{x^2-1} - \frac{x}{x^2-1} + \frac{6}{x^2-1}$$

Solve each rational expression.

$$12) \frac{1}{6} - \frac{1}{x} = \frac{4}{3x^2}$$

$$13) \frac{x}{x+3} - \frac{x}{x-2} = \frac{10}{x^2+x-6}$$

$$14) \frac{3x}{x-1} + \frac{2x}{x-6} = \frac{5x^2-15x+20}{x^2-7x+6}$$

Solve one inequality by graphing and 2 by # line.

Write your answers in set notation.

$$15) \frac{x}{x-3} > \frac{4}{x-2}$$

$$16) \frac{x+1}{x+2} - \frac{x}{x+3} \leq \frac{7}{x^2+5x+6}$$

$$17) \frac{x+1}{x+1} - \frac{x}{x+1} > \frac{2}{x^2-1}$$

