

No calculator. Show all work for full credit.

1. Simplify each rational expression, if possible.

a. $\frac{3x}{3x+6}$

b. $\frac{16x^4}{12x^6}$

c. $\frac{x-3}{x^2-x-6}$

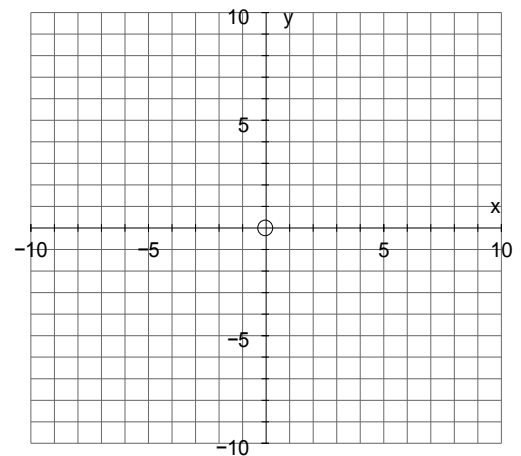
2. Perform the operation and simplify as much as possible.

a. $\frac{4x^3y}{xy^2} \cdot \frac{y^4}{10xy^2}$

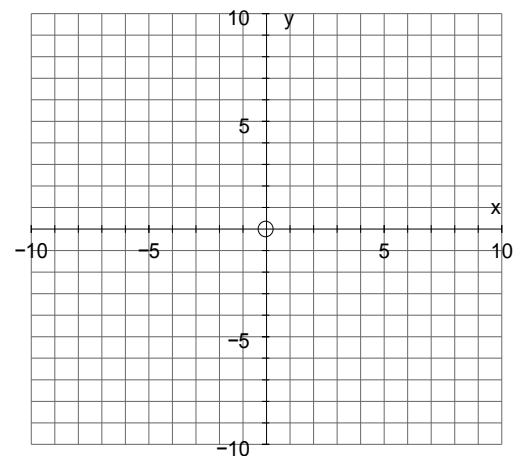
b. $\frac{x^2-2x+1}{x^2-1} + \frac{x}{x-1}$

3. Solve the system of equations by graphing.

$$\begin{cases} y = -2x + 6 \\ y = x^2 - 4x + 3 \end{cases}$$



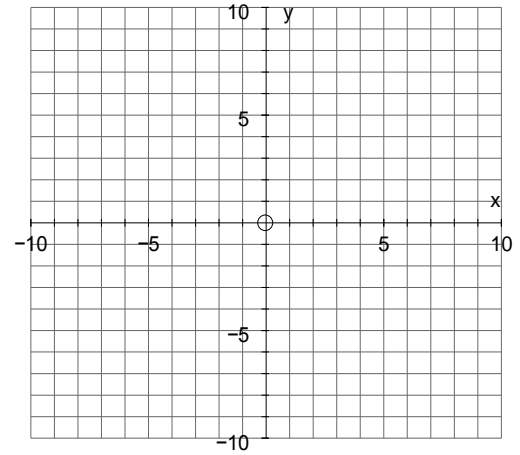
4. Graph $y = \frac{2}{x-3} - 2$.



Vertical asymptote equation:

Horizontal asymptote equation:

5. Graph $y = \frac{1-4x}{x}$. Re-write as two fractions.



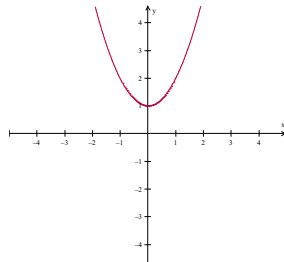
Vertical asymptote equation:

Horizontal asymptote equation:

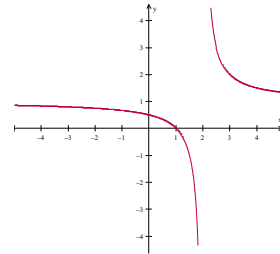
6. Give the domain and range of each relation. Then tell whether each is a function or not.

a. $\{(-2,5),(2,4),(-2,3)\}$

b.



c.

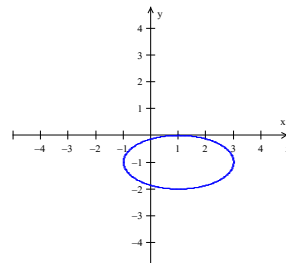


Domain:
Range:
Function?

Domain:
Range:
Function?

Domain:
Range:
Function?

x	-2	-1	0	1
y	3	3	2	2



Domain:
Range:
Function?

Domain:
Range:
Function?

7. Solve for x.

a. $\frac{5}{x+12} = \frac{2}{x}$

b. $\frac{7}{x+1} = \frac{3}{x} - \frac{4}{x+1}$

c. $\frac{3x-1}{x+3} = \frac{x+1}{x}$

8. Solve the equations by square rooting:

a) $\frac{1}{2}x^2 = 6$

b) $4x^2 = 49$

c) $4x^2 + 3 = 18$

d) $(x+2)^2 = 9$

9. Simplify.

a) $3\sqrt{5} - \sqrt{5}$

b) $2\sqrt{20} + \sqrt{45}$

c) $2\sqrt{6t} - 3\sqrt{5t} + 2\sqrt{6t}$

d) $5\sqrt{12x} - \sqrt{3x}$

10. A baseball is hit, and its height is described by the equation $y = -16t^2 - 4t + 21$. Joe jumps to catch it, and his baseball glove is rising up fast! Its height follows the equation $y = 4t + 6$. At what height will Joe catch the ball?

11. Circle the irrational numbers.

5.14

$\sqrt{6}$

8.16

$\frac{14}{15}$

π

$\sqrt{20}$

$-\frac{1}{6}$

-610

1.121221222....

$\sqrt[3]{7}$

8

$\overline{3.2671}$

3.1414141....