

The variables x and y vary inversely. Use the given values to write an equation relating x and y . Then, find y when $x = 4$.

1. $x = 5, y = 2 \quad a = 10$

$$y = \frac{10}{x}; y = \frac{10}{4} = 2.5$$

2. $x = -2, y = 8 \quad a = -16$

$$y = -\frac{16}{x}; y = -\frac{16}{4} = -4$$

The variable z varies jointly with x and y . Write an equation that relates $x, y,$ and z . Find z when $x = 4$ and $y = 3$.

3. $x = 3, y = -3, z = 18 \quad a = \frac{18}{9} = -2$

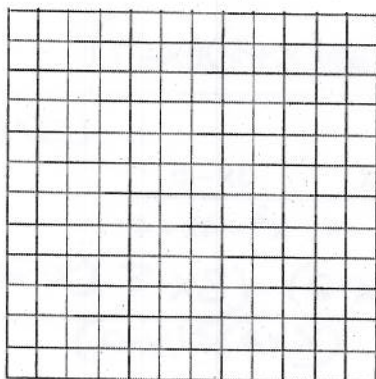
$$z = -2xy; z = -2(2) = -24$$

4. $x = -2, y = 5, z = 30 \quad a = \frac{30}{-10} = -3$

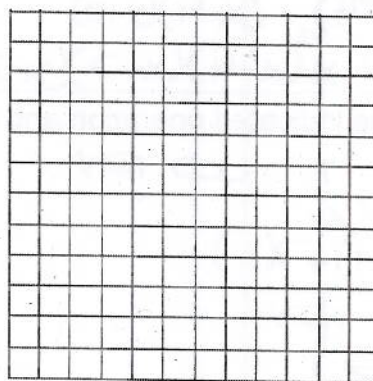
$$z = -3xy; z = -3(2) = -36$$

Graph the function. Identify any vertical asymptotes, any horizontal asymptotes, and state the domain and range.

5. $y = \frac{3}{x}$ \downarrow asymptotes: $x = 0$
 \leftrightarrow asymptotes: $y = 0$

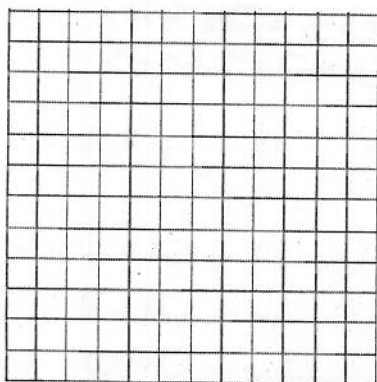


6. $y = \frac{-1}{x-4} - 1$ \downarrow asymptotes: $x = 4$
 \leftrightarrow asymptotes: $y = -1$



Graph the function. Identify any zeros, any vertical asymptotes, and any horizontal asymptotes.

7. $y = \frac{4x^2}{4x+1}$ zeros: $x = 0$
 \downarrow asymptotes: $x = -1/4$
 \leftrightarrow asymptotes: none



8. $y = \frac{4x+3}{5x-2}$ zeros: $x = -3/4$
 \downarrow asymptotes: $x = 2/5$
 \leftrightarrow asymptotes: $y = 4/5$

