Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. Given: y varies directly as x, and $y = -5$ when $x = 2.5$. Write and graph the direct variation function.

_____ 2. The number of lawns l that a volunteer can mow in a day varies inversely with the number of shrubs s that need to be pruned that day. If the volunteer can prune 6 shrubs and mow 8 lawns in one day, then how many lawns can be mowed if there are only 3 shrubs to be pruned?

_____ 3. Determine whether the data set represents a direct variation, an inverse variation, or neither.

x	y
2	420
3	280
4	210

*Then write the equation that models the function

_____ 5. Identify the asymptotes, domain, and range of the function $g(x) = \dfrac{1}{x+7} + 3$.

    a. Vertical asymptote: $x = -7$
        Domain: $\{x | x \neq -7\}$
        Horizontal asymptote: $y = -3$
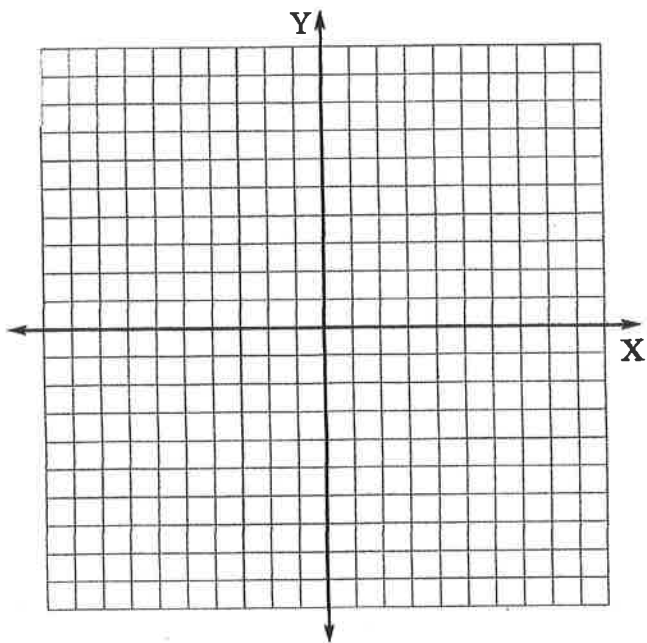   Range: $\{y | y \neq -3\}$

    c. Vertical asymptote: $x = 7$
        Domain: $\{x | x \neq 7\}$
        Horizontal asymptote: $y = -3$
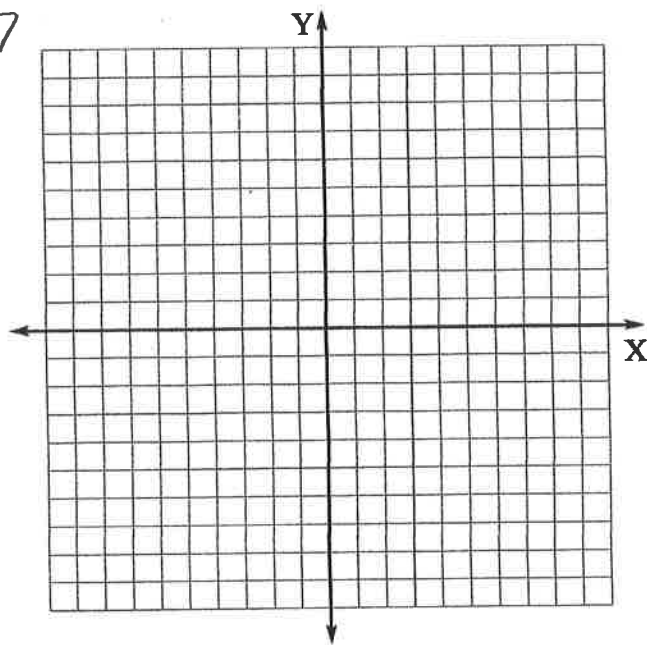   Range: $\{y | y \neq -3\}$

    b. Vertical asymptote: $x = 7$
        Domain: $\{x | x \neq 7\}$
        Horizontal asymptote: $y = 3$
        Range: $\{y | y \neq 3\}$

    d. Vertical asymptote: $x = -7$
        Domain: $\{x | x \neq -7\}$
        Horizontal asymptote: $y = 3$
        Range: $\{y | y \neq 3\}$

_____ 6. Identify the zeros and vertical asymptotes of $g(x) = \dfrac{x^2 - 4x + 3}{x + 2}$. Then graph.

*6

Y

X

#7

Y

X

VA and
HA

holes

_____ 7. Identify the zeros and asymptotes of $f(x) = \dfrac{2x^2 - 18}{x^2 - 16}$. Then graph.
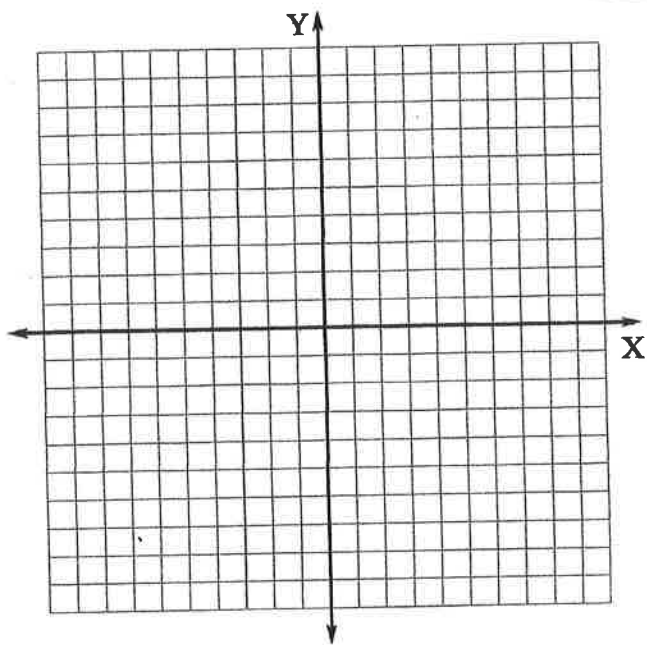
8. Identify holes in the graph of $f(x) = \dfrac{x^2 + 8x + 12}{x + 2}$. Then graph.

Identify x and y intercept

Identify points of discontinuity

Hint: holes and vertical asymptotes

9

Each pair of values is from an inverse variation. Find the missing value.

$(2, 4), (6, y)$

10. The students in a school club decide to raise money by selling hats with the school mascot on them. The table below shows how many hats they can expect to sell based on how much they charge per hat in dollars.
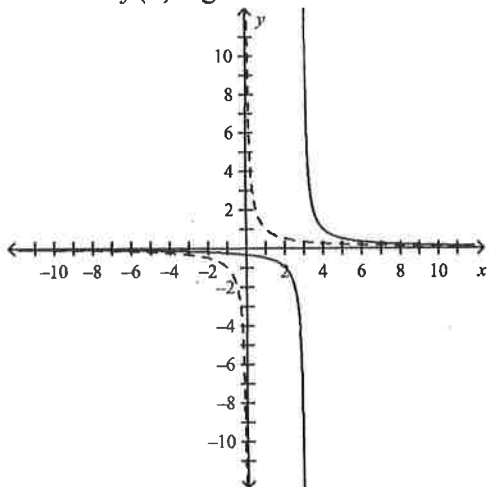
Price per Hat (p)	5	6	8	9
Hats Sold (h)	72	60	45	40

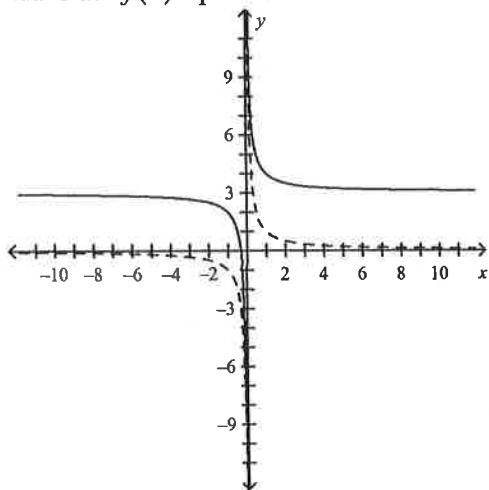a. What is a function that models the data?

b. How many hats can the students expect to sell if they charge $7.50 per hat?

_____ 14. Using the graph of $f(x) = \frac{1}{x}$ as a guide, describe the transformation and graph $g(x) = \frac{1}{x} + 3$.
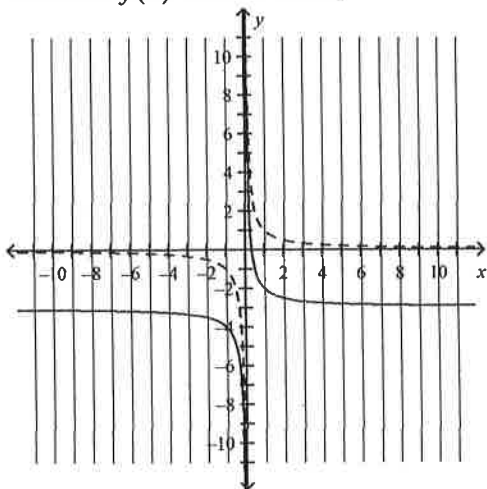
a. Translate $f(x)$ right 3 units.

b. Translate $f(x)$ up 3 units.

c. Translate $f(x)$ down 3 units.

d. Translate $f(x)$ left 3 units.