

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Use analytical methods to solve the equation.**

1) $\frac{6}{x-6} = 1 + \frac{8}{x+6}$

A) -8, 12

B) No solution

C) -10, 12

D) 10, -12

Answer: D

Objective: (4.5) Solve Rational Equation

Give the equations of any horizontal asymptotes for the graphs of the rational functions.

2) $g(x) = \frac{x^2 + 3x - 9}{x - 9}$

A) $y = 2$ B) $y = -3$

C) None

D) $y = 9$

Answer: C

Objective: (4.5) Find Horizontal Asymptotes of Rational Function

Give the equations of any vertical asymptotes for the graphs of the rational functions.

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

A) $x = 3$ B) $x = -4$ C) $x = 4$ D) $x = 0, x = -4$

Answer: D

Objective: (4.5) Find Vertical Asymptotes of Rational Function

4) $g(x) = \frac{x-8}{(x-1)(x+4)}$

A) $x = -8$ B) $x = 8$ C) $x = -1, x = 4$ D) $x = 1, x = -4$

Answer: D

Objective: (4.5) Find Vertical Asymptotes of Rational Function

Solve the problem.5) In the following formula, y is the minimum number of hours of studying required to attain a test score of x :

$$y = \frac{0.39x}{100.5 - x}$$
 How many hours of study are needed to score 86? Round to the nearest hundredth if

necessary.

A) 101.04 hr

B) 5.57 hr

C) 23.10 hr

D) 2.31 hr

Answer: D

Objective: (4.5) Solve Apps: Rational Functions

For the given rational function, find all values of x for which y has the indicated value.

$$6) y = 10x + \frac{12}{x}; \quad y = 23$$

A) $\frac{5}{3}, \frac{1}{2}$

B) $\frac{3}{5}, 2$

C) $\frac{2}{3}, \frac{5}{4}$

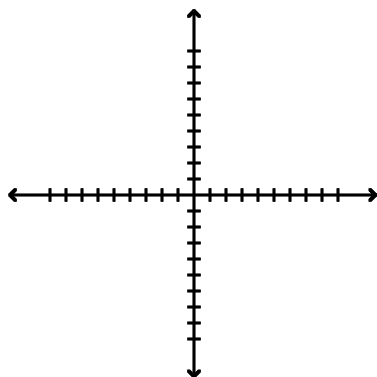
D) $\frac{3}{2}, \frac{4}{5}$

Answer: D

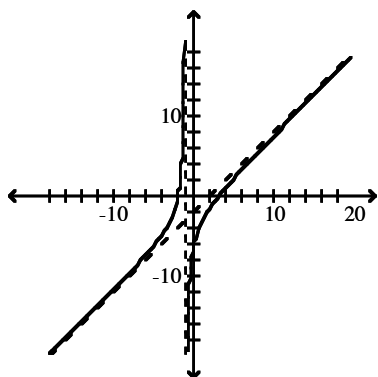
Objective: (4.5) Find Values of x Given Value of y

Graph the function.

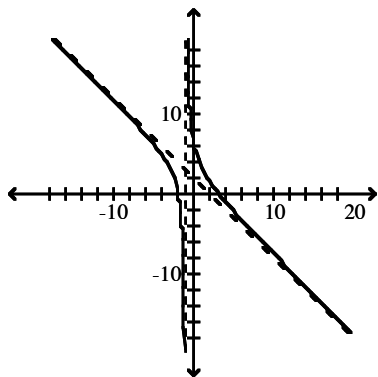
$$7) f(x) = \frac{x^2 - x - 6}{x + 4}$$



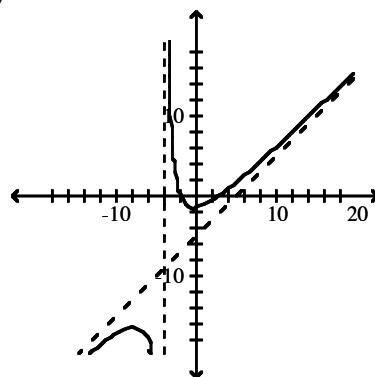
A)



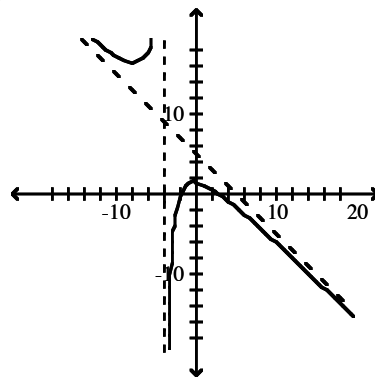
C)



B)



D)



Answer: B

Objective: (4.5) Graph Rational Function

Solve the problem.

8) The average number of vehicles waiting in line at a toll booth of a super highway is modeled by the function

$$n(x) = \frac{x^2}{0.5(1-x)},$$

where x is a quantity between 0 and 1 known as the traffic intensity. To the nearest tenth,

find the average number of vehicles waiting if the traffic intensity is .81.

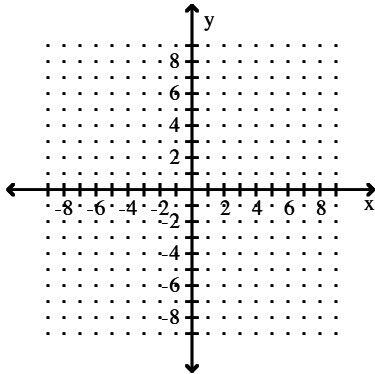
- A) 6.9 vehicles B) 1.6 vehicles C) 3.5 vehicles D) 8.5 vehicles

Answer: A

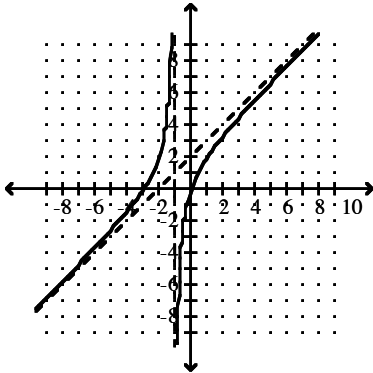
Objective: (4.5) Solve Apps: Rational Functions

Graph the function.

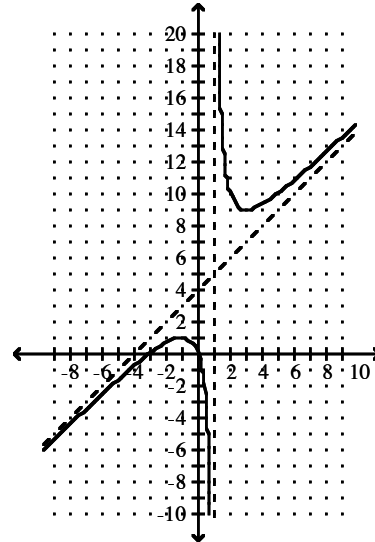
9) $f(x) = \frac{x^2 + 3x}{x - 1}$



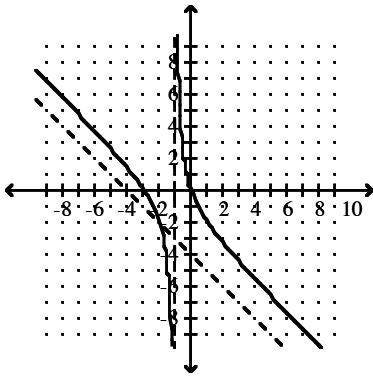
A)



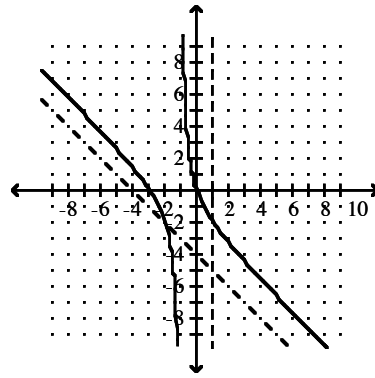
B)



C)



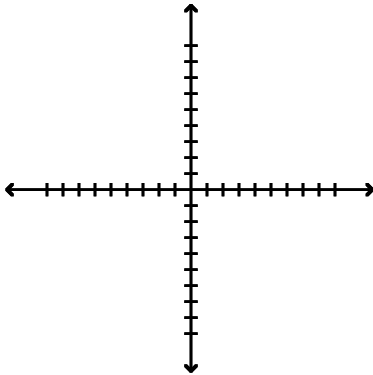
D)



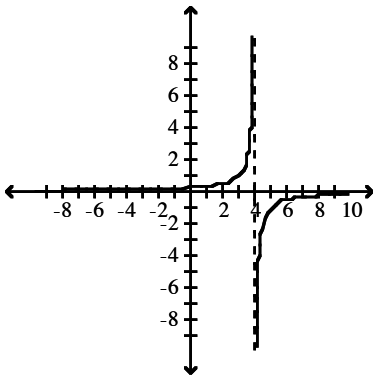
Answer: B

Objective: (4.5) Graph Rational Function

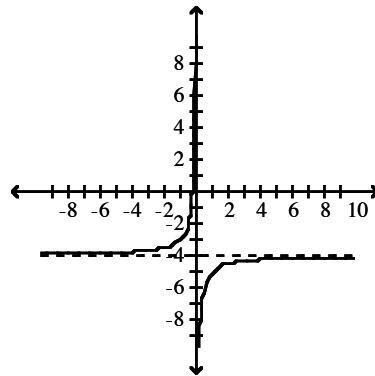
$$10) f(x) = \frac{4x + 1}{x}$$



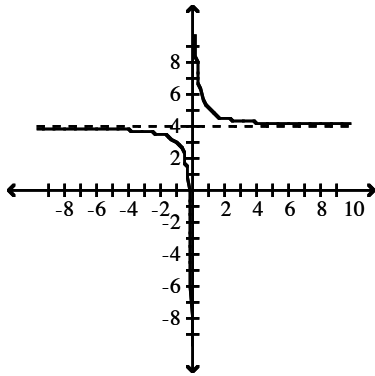
A)



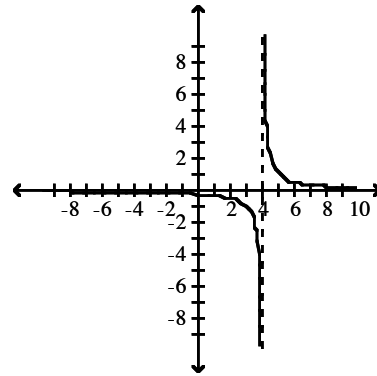
B)



C)



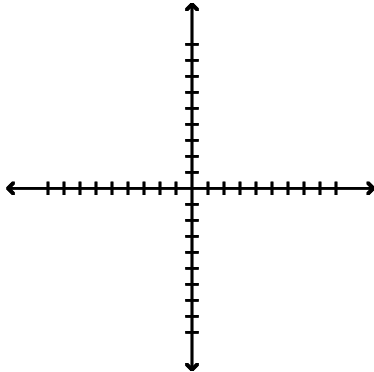
D)



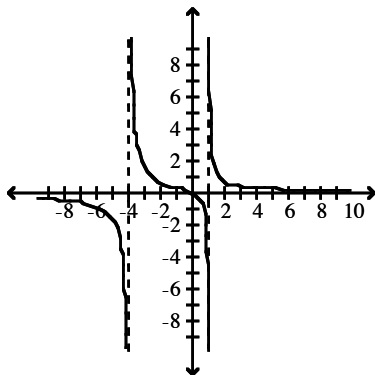
Answer: C

Objective: (4.5) Graph Rational Function

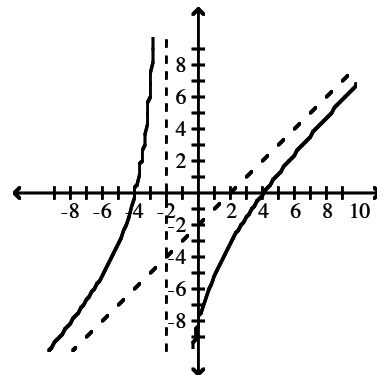
11) $f(x) = \frac{x^2 - 16}{x + 2}$



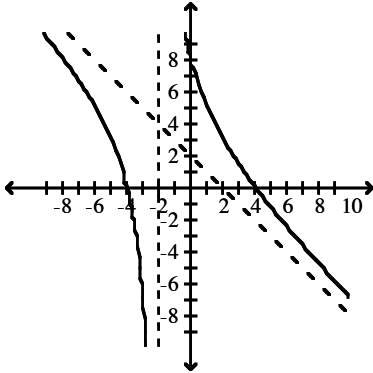
A)



B)



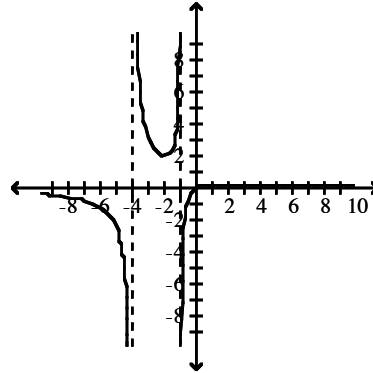
C)



Answer: B

Objective: (4.5) Graph Rational Function

D)



Solve the problem.

12) If the average cost per unit $C(x)$ to produce x units of plywood is given by $C(x) = \frac{1200}{x + 40}$, what is the unit

cost for 10 units? Round to the nearest cent.

A) \$120.00

B) \$3.00

C) \$80.00

D) \$24.00

Answer: D

Objective: (4.5) Solve Apps: Rational Functions

For the given rational function, find all values of x for which y has the indicated value.

13) $y = \frac{14}{x} - \frac{14}{2x}; \quad y = 8$

A) $\frac{9}{8}$

B) $\frac{11}{4}$

C) $\frac{7}{8}$

D) $\frac{21}{8}$

Answer: C

Objective: (4.5) Find Values of x Given Value of y

Use analytical methods to solve the equation.

14) $\frac{5-x}{x} + \frac{3}{4} = \frac{7}{x}$

A) -8

B) -4

C) $\sqrt{\frac{29}{20}}$

D) 8

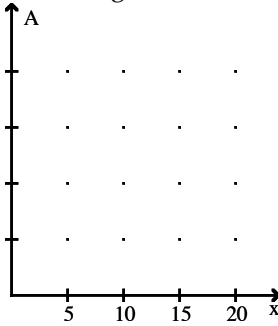
Answer: A

Objective: (4.5) Solve Rational Equation

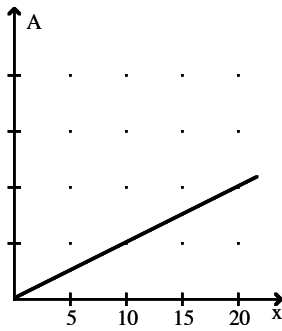
Solve the problem.

15) Suppose that the total-cost function for a certain company to produce x units of a product is given by $C(x) = 2x^2 + 50$.

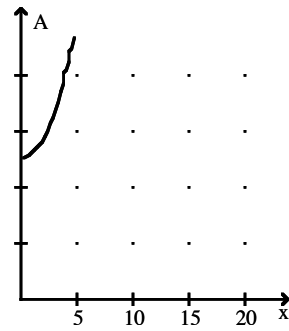
Graph the average cost function $A(x) = C(x)/x$.



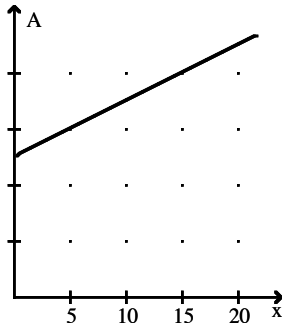
A)



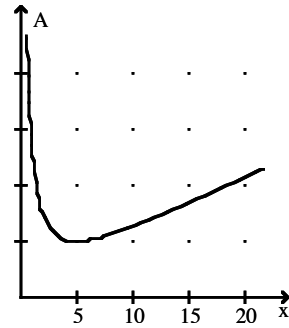
B)



C)



D)



Answer: D

Objective: (4.5) Solve Apps: Rational Functions

For the given rational function, find all values of x for which y has the indicated value.

16) $y = 3x + \frac{18}{x}; y = 15$

A) $\frac{1}{2}, 3$

B) $-2, -3$

C) $1, 6$

D) $2, 3$

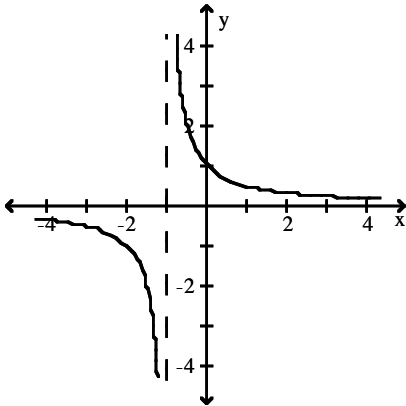
Answer: D

Objective: (4.5) Find Values of x Given Value of y

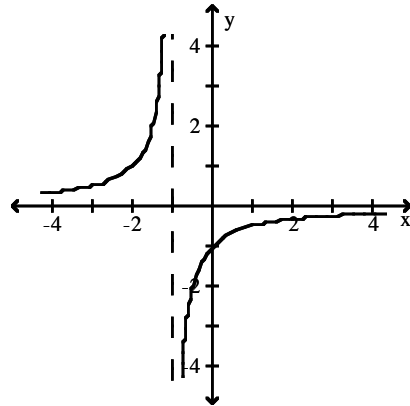
Graph the function.

$$17) f(x) = \frac{-1}{(x+1)^2}$$

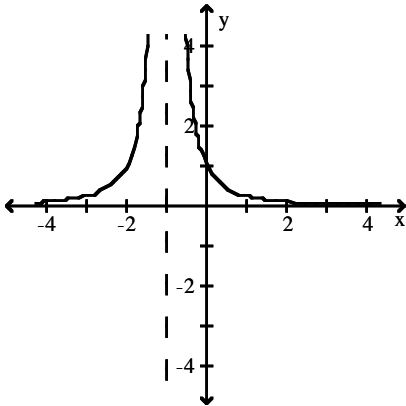
A)



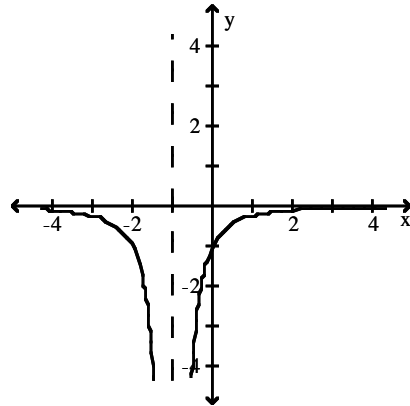
B)



C)



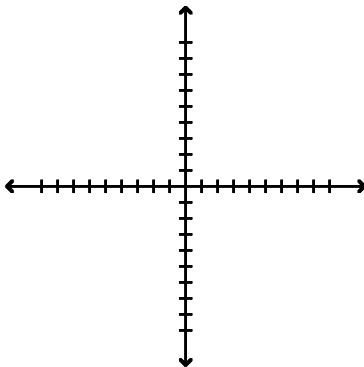
D)



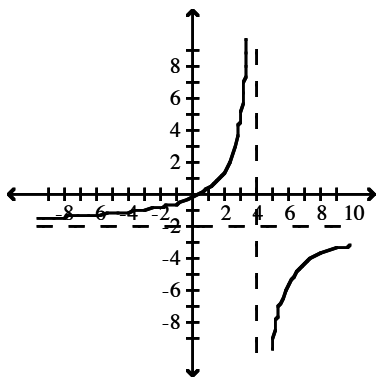
Answer: D

Objective: (4.5) Graph Rational Function

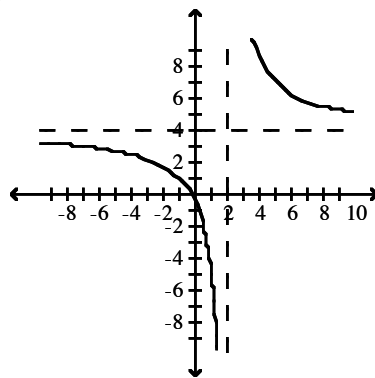
$$18) f(x) = \frac{4x+1}{x-2}$$



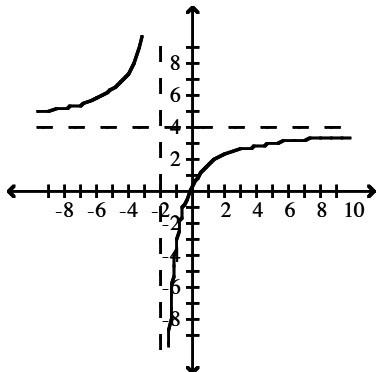
A)



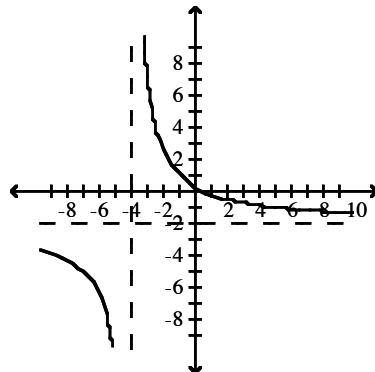
B)



C)



D)



Answer: B

Objective: (4.5) Graph Rational Function

Give the equations of any vertical asymptotes for the graphs of the rational functions.

$$19) f(x) = \frac{4x^3 + 3x - 3}{x^2 + 6x - 27}$$

A) $y = 4$

B) $x = -3, x = 9$

C) $x = 3, x = -9$

D) $y = 3, y = -9$

Answer: C

Objective: (4.5) Find Vertical Asymptotes of Rational Function

Use analytical methods to solve the equation.

$$20) \frac{x+5}{x-2} = 7$$

A) $\frac{19}{6}$

B) $-\frac{9}{8}$

C) No solution

D) $\frac{3}{2}$

Answer: A

Objective: (4.5) Solve Rational Equation