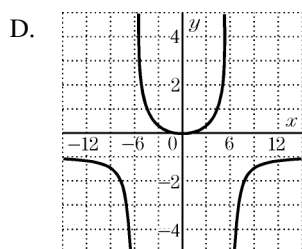
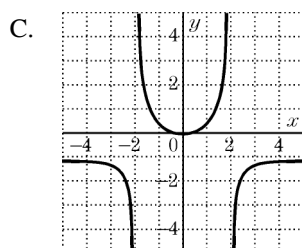
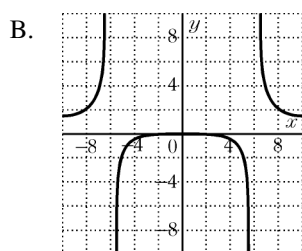
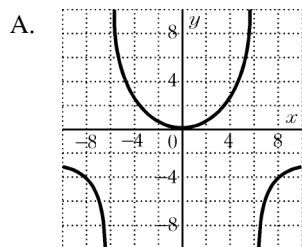


Unit 7 Test Review

Name: _____

Date: _____

1. Which of the following represents the graph of $y = \frac{x^2}{x^2 - 36}$?



2. If Chad can paint 4 rooms in 6 hours and Cierra can do it in 10 hours, then how many hours would it take them working together?

3. Solve for x : $\frac{1}{2x-3} = \frac{5}{4x+1}$

4. Solve: $\frac{2}{x^2-1} + \frac{1}{1-x} = 0$

5. In a given proportion, n is inversely proportional to p . When $n = \frac{1}{27}$, $p = 3$. What is n when $p = \frac{1}{3}$?

6. A factory makes x widgets every year. The average cost of a widget, A , is represented by this formula:

$$A = \frac{G + D}{x} + M$$

In the formula, G is general and administrative costs (also known as factory overhead), D is depreciation of equipment, and M is the material and labor cost of each widget.

Assume general and administrative costs in one year is \$240,000. This includes rent, utilities, administrator salaries, etc. Depreciation is \$110,000 and the material and labor cost of each widget is \$3.50. What happens to average cost as the company increases production and makes a very large number of widgets?

- A. The average cost increases at a high rate as the number of widgets increases.
 B. The average cost increases as the number of widget increases, but the rate of increase slows.
 C. The average cost approaches \$3.50.
 D. The average cost rises to \$3.50 then starts to fall toward zero.

7. Paul can plant his wheat crop in 10 days. His daughter can do it in 15 days. How many days will it take if they work together?

- A. 7.5 B. 7 C. 6 D. 8

8. Solve: $\sqrt{x+2} = \frac{7}{\sqrt{x+2}}$

- A. 5 B. 7 C. 9 D. 14

9. The total resistance, R_T , for a parallel circuit with two bulbs, R_1 and R_2 , is given by the equation:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$

Find the total resistance if $R_1 = 7$ ohms and $R_2 = 3$ ohms.

- A. $\frac{1}{10}$ ohm B. $\frac{21}{10}$ ohm
 C. $\frac{10}{21}$ ohms D. 10 ohms
10. The equation $x - 3 = \sqrt{x - 3}$ has:
- A. both 4 and 3 as roots
 B. 4 as its only root
 C. 3 as its only root
 D. neither 4 nor 3 as roots
11. Simplify: $\frac{c^2 - c - 20}{c^2 - 9} \div \frac{c^2 - 16}{c^2 - c - 12}$
- A. $\frac{c - 5}{c - 3}$ B. $\frac{c + 5}{c + 3}$ C. $\frac{c - 5}{c + 3}$ D. $\frac{c + 5}{c - 3}$
12. Solve: $\sqrt[3]{2x + 9} + 5 = 0$
13. Simplify: $\frac{2x^2 - x - 6}{2x^2 + 3x - 2} \div \frac{x^2 - 9}{x^2 - x - 6} \times \frac{4x^2 - 4x + 1}{2x^2 - 5x + 2}$

- A. 1 B. $\frac{2x + 3}{x + 3}$
 C. $\frac{(2x + 3)(x + 3)}{(x + 2)^2}$ D. $\frac{x + 3}{2x + 3}$

14. An airline flies between Dallas and Chicago. There are a maximum of 200 passengers on a flight. The profit per passenger is represented by this equation:

$$P = \frac{nt - 10000}{ns}$$

where P is profit (dollars), n is the number of passengers, t is the average ticket price, and s is the service cost.

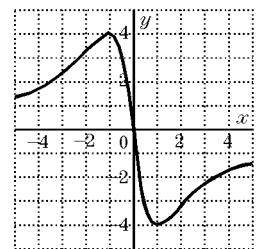
On a certain flight, the average ticket price is \$200 and the service cost is \$5. Which of the following is the *best* explanation of the profit per passenger compared to the number of passengers on a flight?

- A. If there are at least 50 passengers, there is a profit of \$40 each; otherwise there is a loss.
 B. There is \$30 profit per passenger if the flight is full, and there is a loss with fewer than 50 passengers.
 C. The profit increases by \$5 per passenger after the first 50, then it falls by \$5 per passenger after 150.
 D. There is no profit for the first 50 passengers, then the profit increases by \$5 for each passenger up to 200.

15. Simplify: $\frac{7}{x^2 + 7x + 12} + \frac{5}{x + 4}$

16. Which of the following is the equation of an asymptote for the function graphed?

- A. $y = 0$
 B. $y = 4$
 C. $x = -4$
 D. $x = 4$

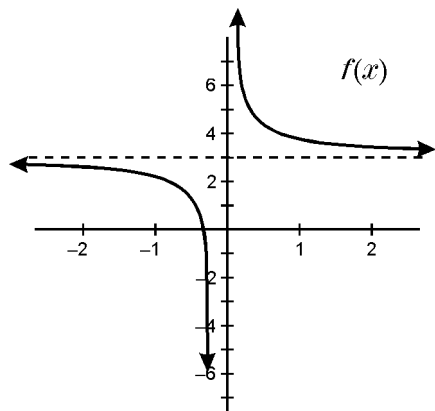


17. Solve: $\frac{2(x - 7)}{x^2 + 3x - 28} + \frac{x - 2}{x - 4} = \frac{x + 3}{x + 7}$

18. The heat loss of a glass window varies jointly as the area of the window and the difference between outside and inside temperature. A window that measures 3 feet by 5 feet loses 500 BTU/h when the temperature outside is 10 degrees less than the inside temperature. What is the heat loss through the same window if the difference between outside and inside temperature is 25 degrees?

- A. 1000 BTU/h B. 1250 BTU/h
C. 1500 BTU/h D. 2000 BTU/h

19. What value(s) are restricted from the range of $f(x)$?



- A. 1 B. 0 C. 3
D. there are no restricted values

20. Graph the following. Be sure to label important points.

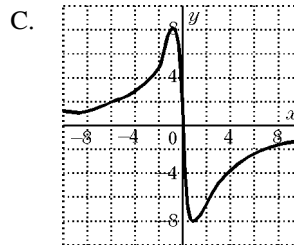
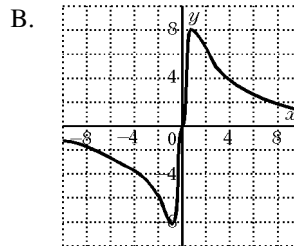
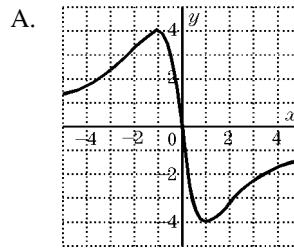
$$g(x) = \frac{1}{x^2 + 4x - 5}$$

21. Perform the indicated operations and express the result in simplest form:

$$\frac{6x^2 + x - 2}{2x^2 + 4x} \div \frac{3x + 2}{x^3 - 4x}$$

22. Which of the following represents the graph of

$$y = \frac{-4x}{x^2 + 1}$$



23. Simplify completely: $\frac{\frac{y}{x} - \frac{x}{y}}{\frac{1}{x} + \frac{1}{y}}$

24. Subtract and simplify: $\frac{x + 4}{x^2 + 3x - 10} - \frac{x - 4}{x^2 - 6x + 8}$

- A. $-\frac{1}{x^2 + 3x - 10}$ B. $-\frac{1}{x^2 - 3x - 8}$
C. $-\frac{2x}{2x^2 - 3x - 2}$ D. $-\frac{x^2 - 16}{x + 5}x - 2$

Unit 7 Test Review 11/30/2015

1.
 Answer: B
 Objective: F.IF.7D

2.
 Answer: 3.75 hours
 Objective: Solving applications of rational equations

3.
 Answer: $2\frac{2}{3}$
 Objective: A.REI.2

4.
 Answer: \emptyset
 Objective: A.REI.2

5.
 Answer: $\frac{1}{3}$

6.
 Answer: C
 Objective: A.REI.2

7.
 Answer: C

8.
 Answer: A
 Objective: A.REI.2

9.
 Answer: B
 Objective: A.REI.2

10.
 Answer: A
 Objective: A.REI.2

11.
 Answer: A
 Objective: A.APR.7

12.
 Answer: -67
 Objective: A.REI.2

13.
 Answer: B
 Objective: A.APR.7

14.
 Answer: B
 Objective: A.REI.2

15.
 Answer: $\frac{5x + 22}{(x + 4)(x + 3)}$
 Objective: A.APR.7

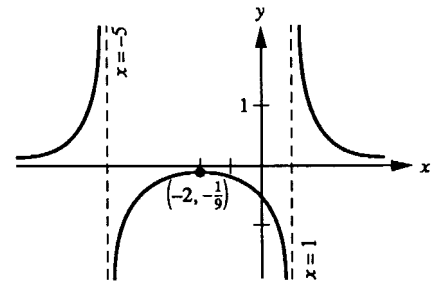
16.
 Answer: A
 Objective: F.IF.7D

17.
 Answer: 2
 Objective: A.REI.2

18.
 Answer: B

19.
 Answer: C
 Objective: F.IF.5

20.
 Answer:



Objective: F.IF.7D

21.
 Answer: $\frac{(2x-1)(x-2)}{2}$
 Objective: A.APR.7

22.
 Answer: C
 Objective: F.IF.7D

23.
 Answer: $y - x$
 Objective: A.APR.7

24.
 Answer: A
 Objective: A.APR.7