

MA90 Exercises for section 7.5 Applications of Rational Expressions**Multiple Choice**

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

_____ 1. One number is 5 times as large as another. The sum of their reciprocals is $\frac{42}{5}$. Find the two numbers.

a. $\frac{1}{7}, \frac{2}{7}$

b. $\frac{1}{7}, \frac{5}{7}$

c. $\frac{1}{2}, \frac{5}{2}$

d. $\frac{1}{6}, \frac{5}{6}$

e. $\frac{1}{9}, \frac{5}{9}$

_____ 2. The sum of a number and its reciprocal is $\frac{34}{15}$. Find the number.

a. $\frac{3}{5}, \frac{5}{3}$

b. $\frac{8}{9}, \frac{9}{8}$

c. $\frac{5}{7}, \frac{7}{5}$

d. $\frac{2}{9}, \frac{9}{2}$

e. $\frac{10}{11}, \frac{11}{10}$

_____ 3. The sum of the reciprocals of two consecutive integers is $\frac{13}{42}$. Find the two integers.

a. 3, 4

b. 7, 8

c. 6, 7

d. 8, 9

e. 4, 5

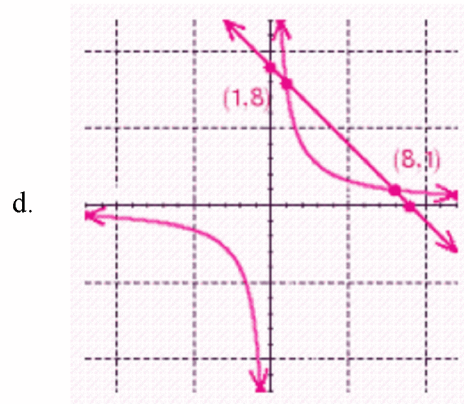
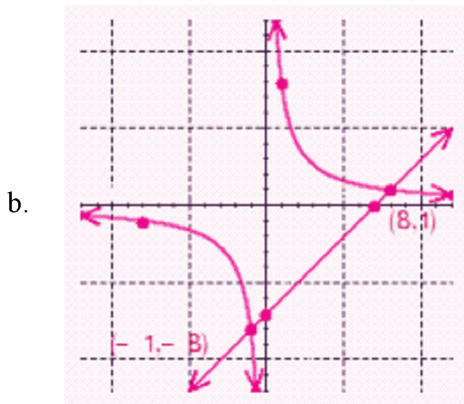
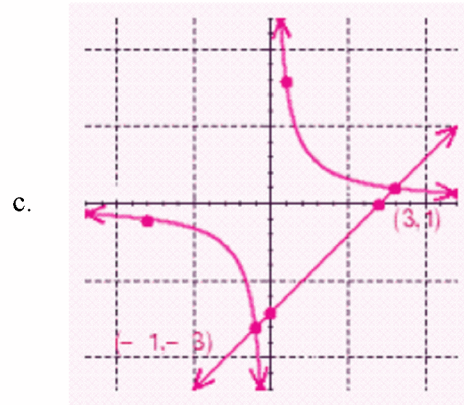
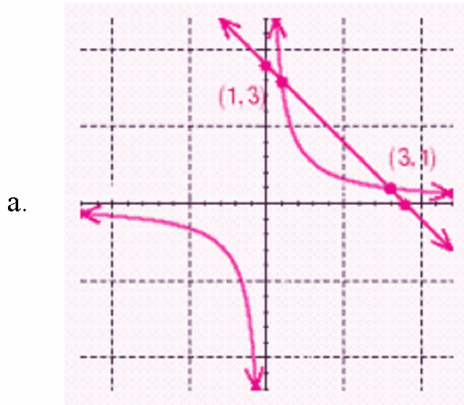
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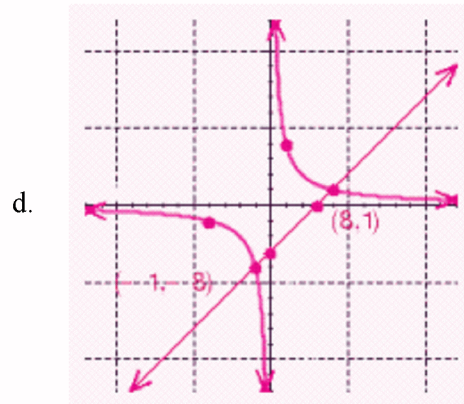
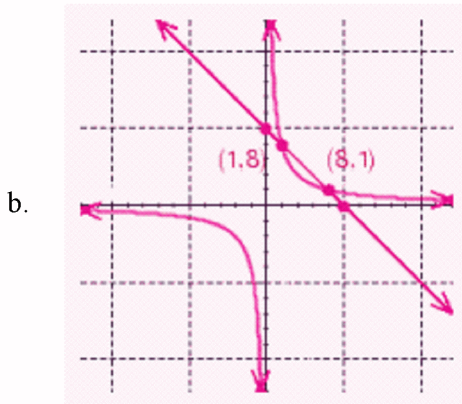
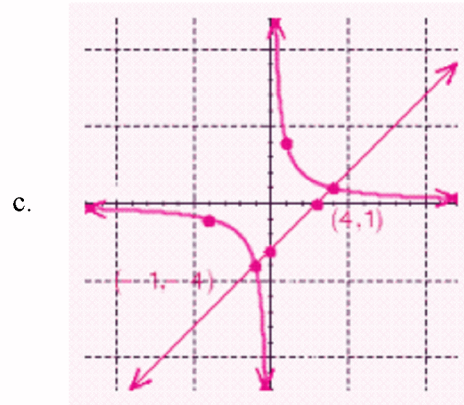
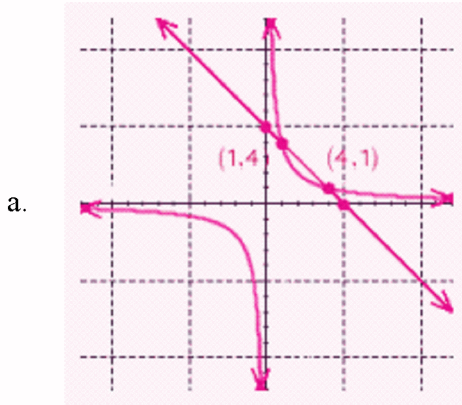
- _____ 4. An airplane flying against the wind travels 145 miles in the same amount of time it would take the same plane to travel 165 miles with the wind. If the wind speed is a constant 20 miles per hour, how fast would the plane travel in still air?
- a. 38 miles per hour
 - b. 310 miles per hour
 - c. 172 miles per hour
 - d. 153 miles per hour
 - e. 165 miles per hour
- _____ 5. One car travels 560 miles in the same amount of time it takes a second car traveling 12 miles per hour slower than the first to go 476 miles. What are the speeds of the cars?
- a. 60 mph; 48 mph
 - b. 90 mph; 78 mph
 - c. 85 mph; 73 mph
 - d. 95 mph; 83 mph
 - e. 80 mph; 68 mph
- _____ 6. To train for the running of a triathlon, Jerri jogs 1 hour each day over the same 15-mile course. Eight miles of the course is downhill, whereas the other 7 miles is on level ground. Jerri figures that she runs 2 miles per hour faster downhill than she runs on level ground. Find the rate at which Jerri runs on level ground.
- a. 16 mph
 - b. 9 mph
 - c. 20 mph
 - d. 14 mph
 - e. 18 mph

- _____ 7. A water tank can be filled in 28 hours by an inlet pipe and emptied in 36 hours by an outlet pipe. How long will it take to fill the tank if both pipes are left open?
- a. 64 hours
 - b. 32 hours
 - c. 126 hours
 - d. 36 hours
 - e. 72 hours
- _____ 8. A bathtub can be filled by the cold water faucet in 12 minutes and by the hot water faucet in 15 minutes. How long does it take to fill the tub if both faucets are open?
- a. $\frac{36}{5}$ minutes
 - b. $\frac{28}{9}$ minutes
 - c. $\frac{38}{3}$ minutes
 - d. $\frac{20}{3}$ minutes
 - e. $\frac{43}{3}$ minutes
- _____ 9. A sink can be filled by the cold water faucet in 6 minutes. The drain can empty a full sink in 9 minutes. If the sink is empty and both the cold water faucet and the drain are open, how long will it take the sink to overflow?
- a. 18 minutes
 - b. 16 minutes
 - c. 19 minutes
 - d. 21 minutes
 - e. 15 minutes

10. Graph $y = \frac{8}{x}$ and $x + y = 9$ on the same coordinate system. At what points do the two graphs intersect?



___ 11. Graph $y = \frac{4}{x}$ and $x - y = 3$ on the same coordinate system. At what points do the two graphs intersect?



Numeric Response

- Travis paddles his kayak in the harbor at Morro Bay, California, where the incoming tide has caused a current in the water. From the point where he enters the water, he paddles 4 miles against the current, then turns around and paddles 4 miles back to where he started. His average speed when paddling with the current is 1 mile per hour faster than his speed against the current. If the complete trip (out and back) takes him 1.8 hours, find his average speed when he paddles against the current.

_____ miles per hour

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Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: B | PTS: 1 |
| 2. ANS: A | PTS: 1 |
| 3. ANS: C | PTS: 1 |
| 4. ANS: B | PTS: 1 |
| 5. ANS: E | PTS: 1 |
| 6. ANS: D | PTS: 1 |
| 7. ANS: C | PTS: 1 |
| 8. ANS: D | PTS: 1 |
| 9. ANS: A | PTS: 1 |
| 10. ANS: D | PTS: 1 |
| 11. ANS: C | PTS: 1 |

NUMERIC RESPONSE

1. ANS: 4
PTS: 1