

Module
6
Rational Functions
Quiz
Select the best answer.

1. If a varies jointly with b and c , which statement is also true?
- A b varies directly with a and inversely with c .
- B c varies directly with b and inversely with a .
- C b varies jointly with a and c .
- D c varies jointly with a and b .

2. P varies directly with Q and inversely with R , and $P = 9$ when $Q = 3$ and $R = 4$. Find Q when $P = 1$ and $R = 0.5$.

F $\frac{1}{24}$

H 24

G $\frac{1}{8}$

J 216

3. Based on the data set, which statement is true?

A	5	4	2
B	6	2	3
C	15	36	12

- A A varies directly with B and inversely with C .
- B B varies jointly with A and C .
- C C varies directly with A and inversely with B .
- D C varies jointly with A and B .

4. What is the sum of all the solutions of the equation $\frac{4}{x} + \frac{4}{2x+3} = 9$?

F $-\frac{5}{6}$

H $\frac{1}{2}$

G $\frac{1}{3}$

J $\frac{11}{6}$

5. Which function is continuous?

A $A(x) = \frac{1}{x^2 + 2x + 1}$

B $B(x) = \frac{1}{x^2 + 2x + 2}$

C $C(x) = \frac{1}{x^2 - 1}$

D $D(x) = \frac{x}{x^2 - 2}$

6. Identify all asymptotes of

$$f(x) = \frac{x^2 + 2x - 15}{x^3 + 1}$$

F vertical asymptote: $x = -1$; horizontal asymptote: $y = 0$

G vertical asymptote: $x = -1$; horizontal asymptotes: $y = -5$ and $y = 3$

H no vertical asymptote; horizontal asymptote: $y = 0$

J no vertical asymptote; horizontal asymptote: $y = -1$

7. Find the solution set for the equation

$$\frac{5 - x}{x^2 - 3x - 10} = 2$$

A $\{-5\}$

B $\{2.5\}$

C $\{-5, 2.5\}$

D There is no solution.

8. Ted walks once around the track at school at an average rate of 4 miles per hour. He then runs once around the track. If his average for the two laps is 6 miles per hour, what is his average rate when running?

F 8 mph

H 9.6 mph

G 9 mph

J 12 mph

Module
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Rational Functions

Quiz *continued*

9. A pool has three drains. The largest can drain the pool in 6 hours, the smallest can drain the pool in 12 hours. The other can drain the pool in 8 hours. How long will it take to drain the pool if all three drains are open?

- A 2 hours and 20 minutes
- B 2 hours and 40 minutes
- C 3 hours
- D 3 hours and 20 minutes

10. Based on the data set, how does *A* vary with *B* and *C*?

A	60	64	48
B	5	2	3
C	3	8	4

11. Find the solution set for the equation

$$\frac{4x^2 - 25}{2x - 5} = 14.$$

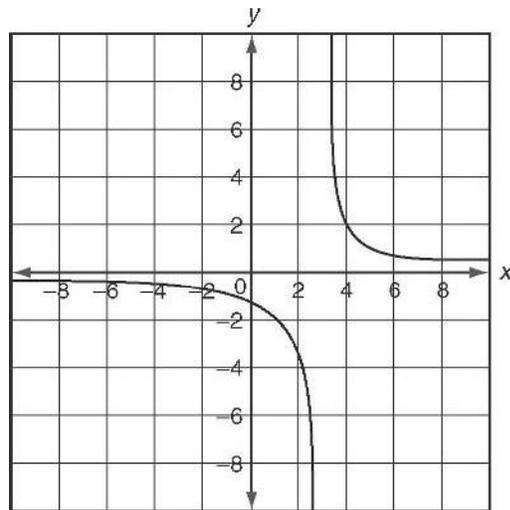
12. Simplify $\frac{x-2}{x-\frac{4}{x}}$.

13. Carol drives her daughter to school at an average rate of 30 miles per hour, but only goes an average rate of 20 miles per hour on the way home because of traffic. What is her average rate for the entire round trip?

14. At what point does the function

$$f(x) = \frac{x+2}{x^2+5x+6}$$

15. The graph below has a vertical asymptote at $x = 3$, a horizontal asymptote at $y = 0$, and passes through the point $(4, 2)$. What could be the function of this graph?



16. Pipe A can fill a pool in 8 hours. Pipe B can fill the pool in 4 hours. How long will it take Pipes A and B to fill the pool if they are both used?
