Testbank for Quiz #3 on McKeague 4.5, 4.6, and 4.7

1. Simplify as much as possible.
\[
\frac{1}{10} - \frac{1}{5}
\]
\[
\frac{1}{9} - \frac{1}{18}
\]
   a. \(-\frac{9}{5}\)  
   b. \(-\frac{5}{9}\)  
   c. \(\frac{5}{9}\)  
   d. \(\frac{9}{5}\)

2. Simplify as much as possible.
\[
\frac{\frac{1}{x} + \frac{2}{y}}{\frac{2}{x} + \frac{1}{y}}
\]
   a. \(\frac{2x + y}{x + 2y}\)  
   b. \(\frac{2x + y}{x + y}\)  
   c. \(\frac{x - 2y}{x + 2y}\)  
   d. \(\frac{x + y}{2y}\)

3. Simplify as much as possible.
\[
\frac{\frac{3t + 1}{t^2 - 64}}{\frac{9t^2 - 1}{t - 8}}
\]
   a. \(\frac{1}{(t + 3)}\)  
   b. \(\frac{1}{(t + 8)(3t - 1)}\)  
   c. \((t + 8)(t + 3)\)  
   d. \(\frac{1}{(t + 3)(8t - 1)}\)

4. Simplify as much as possible.
\[
\frac{\frac{y - 3}{y + 3} - \frac{y + 3}{y - 3}}{\frac{y - 3}{y + 3} + \frac{y + 3}{y - 3}}
\]
   a. \(\frac{3}{y + 3}\)  
   b. \(-\frac{6y}{y^2 + 9}\)  
   c. \(\frac{y - 3}{y + 3}\)  
   d. \(\frac{y^2 - 9}{y^2 + 9}\)

5. Solve the equation.
\[
a \cdot \frac{2}{3} = \frac{3}{4}
\]
   a. \(a = \frac{6}{13}\)  
   b. \(a = -\frac{5}{13}\)  
   c. \(a = \frac{5}{12}\)  
   d. No solution  
   e. None of the above

6. Solve the equation.
\[
\frac{3}{x + 2} = \frac{2}{3} - \frac{x}{x + 2}
\]
   a. \(x = -3\)  
   b. \(x = -5\)  
   c. \(x = 3\)  
   d. No solution  
   e. None of the above
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7 Solve the equation.
\[ 1 - \frac{5}{x} = \frac{6}{x^2} \]
   a. \( x = -1, 6 \)  
   b. \( x = -6, 6 \)  
   c. \( x = -2, 7 \)  
   d. No solution  
   e. None of the above

8 Solve the equation.
\[ \frac{x + 9}{x + 8} = \frac{1}{x + 8} + 9 \]
   a. \( x = 2 \)  
   b. \( x = -5 \)  
   c. \( x = 1, -3 \)  
   d. No solution  
   e. None of the above

9 Solve the equation.
\[ \frac{t - 6}{t^2 - 3t} = \frac{-6}{t^2 - 9} \]
   a. \( t = -6 \)  
   b. \( t = -6, 3 \)  
   c. \( t = 3 \)  
   d. No solution  
   e. None of the above

10 Solve the equation.
\[ \frac{2}{y^2 - 10y + 21} - \frac{1}{y^2 - 9} = \frac{4}{y^2 - 4y - 21} \]
   a. \( y = \frac{25}{3}, 3 \)  
   b. \( y = \frac{25}{3} \)  
   c. \( y = -\frac{5}{28} \)  
   d. No solution  
   e. None of the above

11 One number is 3 times another. The sum of their reciprocals is \( \frac{16}{3} \). Find the numbers.
   a. \( \frac{1}{8}, \frac{3}{8} \)  
   b. \( \frac{1}{4}, \frac{3}{4} \)  
   c. 1, 3  
   d. \( \frac{1}{8}, \frac{8}{3} \)

12 The sum of a number and its reciprocal is \( \frac{82}{9} \). Find the number.
   a. 9  
   b. 6  
   c. \( \frac{1}{9} \)  
   d. \( \frac{1}{6} \)

13 The sum of the reciprocals of two consecutive integers is \( \frac{5}{6} \). Find the two integers.
   a. 1, 2  
   b. 2, 3  
   c. 3, 4  
   d. 4, 5

14 The speed of a boat in still water is 4 miles per hour. If the boat travels 5 miles downstream in the same amount of time it takes to travel 2.5 miles upstream, what is the speed of the current?
   a. \( \frac{1}{4} \) mph  
   b. \( \frac{3}{4} \) mph  
   c. \( \frac{4}{3} \) mph  
   d. 3 mph
15 A train travels 40 miles per hour faster than a car. If the train covers 198 miles in the same time the car covers 110 miles, what is the speed of each of them?

- a. Train: 90 mph  
  Car: 50 mph
- b. Train: 85 mph  
  Car: 45 mph
- c. Train: 100 mph  
  Car: 60 mph
- d. Train: 105 mph  
  Car: 65 mph

16 A tour bus leaves Sacramento every Friday evening at 5:00 P.M. for a 170-mile trip. This week, however, the bus leaves at 5:30 P.M. To arrive on time, the driver drives 9 miles per hour faster than usual. What is the bus’s usual speed?

- a. 60 mph  
- b. 51 mph  
- c. 42 mph  
- d. 69 mph
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