

Unit 5 Test - Rational Expressions/Equations

Date _____ Period _____

Choose the correct answer to each problem to simplify the expression.

1) In solving the equation below, the first step would be to set up the common denominator.

What is the common denominator?

$$\frac{1}{2k} + \frac{4}{k} = \frac{k}{k+2}$$

- A) $2k^2 + 4$ B) $2k^2 + 2$ C) $2k$ D) $k^2 + 2k$

2) Simplify the expression below. Show all work for credit.

Given that $a = x^2 + x - 20$ and $b = x^2 - 9x + 20$, what is $\frac{a}{b}$ simplified?

- A) -1 B) $\frac{a+5}{a-5}$ C) 1 D) $\frac{a-5}{a+5}$

3) Given that $a = \frac{17x-9}{3x+6}$ and $b = \frac{2x-3}{3x+6}$, what is $a - b$?

- A) $-5x$ B) $\frac{5x-4}{x-2}$
 C) $\frac{5x-2}{3x}$ D) $\frac{5x-2}{x+2}$

4) Given that $a = \frac{p^2 - 14p + 40}{16p^2}$ and $b = \frac{3p^2 - 18p + 24}{2p^2 - 4p}$, what is $a \div b$?

- A) $\frac{1}{24p(p-10)}$ B) $\frac{p-10}{24p}$
 C) $\frac{24p}{p-10}$ D) $\frac{24(p-10)}{p^2}$

5) When solving the equation below, what is the extraneous solution?

$$\frac{1}{n-4} + \frac{2}{n-2} = \frac{2}{n^2 - 6n + 8}$$

- A) 2 B) 0 C) 4 D) 3

6) Given $a = \frac{18w^2 - 2}{3w^2 - 8w - 3}$ and $b = \frac{3w^2 - 7w - 6}{12w^2 + 80w - 28}$, what is $a \cdot b$?

- A) $\frac{3w+2}{2(w+7)}$ B) $\frac{2(3w+2)}{w+7}$
C) $2 \cdot \frac{3w+1}{w+7}$ D) $\frac{3w+1}{2(w+7)}$

7) If no denominator is equal to 0, what is the solution set for the following equation?

$$\frac{4v-3}{v^2} = \frac{5}{2v}$$

- A) 2 B) $-\frac{2}{5}, 2$ C) -2 D) $-\frac{2}{5}, \frac{2}{5}$

8) Find the perimeter of a rectangle with side lengths of $\frac{9x+14}{x^2-4}$ and $\frac{x+1}{x+2}$.

- A) $\frac{x-2}{x+6}$ B) $2(x-3)$ C) $\frac{2(x+6)}{x-2}$ D) $x-3$

9) Given $a = \frac{8}{v+2}$ and $b = \frac{3}{v-6}$, what is $a + b$?

- A) $\frac{11v-42}{(v+2)(v-6)}$ B) $\frac{11}{2v-4}$
C) $\frac{11}{(v+2)(v-6)}$ D) $\frac{11v-42}{2v-4}$

10) Given $a = \frac{m}{m-3}$ and $b = \frac{5m-48}{m^2+5m-24}$, what is $a + b$?

A) $\frac{m+16}{m+8}$ B) $m+2$

C) $\frac{m+8}{m-3}$ D) $\frac{m}{m-3}$

11) $a = \frac{k-9}{28k^3}$ and $b = \frac{k-9}{4k^6}$, what is $a \div b$?

A) $\frac{k^2}{7}$ B) $\frac{7}{k^2}$

C) $\frac{k^3}{7}$ D) $\frac{7}{k^3}$

12) Given $a = \frac{2c^2 - 5c - 3}{c^2 + 4c - 21}$ and $b = 2c + 1$, what is $a \div b$?

A) $\frac{c+3}{(c+7)(c-3)}$ B) $\frac{2c+1}{c+7}$

C) $\frac{1}{c+7}$ D) $c+7$

13) Given $a = 2a^3 - 32a$ and $b = 2a^3 + 16a^2 + 32a$, what is $\frac{a}{b}$ simplified?

A) $\frac{a-4}{a+4}$ B) $2(a-4)$ C) $\frac{2(a-4)}{a+4}$ D) -2

14) If $a = \frac{4yz^2}{3xy^4z}$ and $b = \frac{15x^2y}{8x^3yz}$, what is $a \cdot b$?

A) $\frac{2x^2y^2}{5z}$ B) $\frac{5}{2x^2y^3}$

C) $\frac{2x^2y^2}{5}$ D) $\frac{5z}{2x^2y^2}$