

## Chapter 7 Unit Test - Rational Expressions

Name \_\_\_\_\_ Section \_\_\_\_\_

Be sure to show all your work and circle your answer.

1) State the domain of  $\frac{3x-5}{x^2-7x+6}$ .

**Simplify the following:**

2)  $\frac{5y^2+19y+12}{50y^3-32y}$

3)  $\frac{8x^3-27}{2x+3} \cdot \frac{4x^2-9}{4x^2+6x+9}$

4)  $\frac{x^3+4x}{x^2-8x+16} \div \frac{x^2-4}{x^3-4x^2-16x+64}$

5)  $\frac{3x+1}{x^3-6x^2} \cdot \frac{x^2-12x+36}{9x^3-x} \div \frac{x^2-9x+18}{12x^2-19x+5}$

6)  $\frac{2x}{4x^2-12x-7} - \frac{7}{4x^2-12x-7}$

7)  $\frac{5x}{25x^2-64} - \frac{8}{64-25x^2}$

8)  $\frac{6}{x^2-x-12} - \frac{5}{x^2+x-20}$

9)  $\frac{3x}{6x^2-7x-3} - \frac{1}{12x^2+19x+5} + \frac{-10}{8x^2-2x-15}$

10)  $\frac{\frac{2}{3} - \frac{4}{m}}{\frac{7}{6m^2} + \frac{1}{9m}}$

11)  $\frac{\frac{6}{25x^2-9}}{\frac{3}{5x+3} + \frac{5}{5x-3}}$

**Solve the following:**

12)  $\frac{3}{2x-5} - 4 = \frac{7x}{2x-5}$

13)  $\frac{12p+19}{p^2+7p+12} - \frac{5}{p+4} = \frac{3}{p+3}$

14)  $\frac{x}{x+6} = \frac{72}{x^2-36} + 4$

15)  $-\frac{3x}{4x+5} = \frac{-2}{x+5}$

16) Solve  $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$  for  $C_2$ .

17) Solve  $g = \frac{T+mf}{m}$  for  $m$

**Set-up the equations and solve the following:**

- 18) Given  $\triangle DCR \sim \triangle VWP$ , DR is two less than twice DC, VW is three more than twice DC, and  $VP = 25$  in, find DC.
- 19) Maria can mow a large lawn in 4 hours working alone. Juan can mow the same lawn in 5 hours. If they work together, how long will it take them to mow the lawn?
- 20) Leroy drove 448 miles in the same amount of time as Juanita drove 511 miles. If Juanita was driving 9 miles per hour faster than Leroy, how fast were they driving?
- 21) If the sum of the reciprocals of two consecutive integers is  $\frac{11}{30}$ , find the integers.

**Answer Key:**

- 1)  $\{x \mid x \text{ is a real number, } x \neq 1 \text{ and } x \neq 6\}$  2)  $\frac{y+3}{2y(5y-4)}$  3)  $(2x-3)^2$
- 4)  $\frac{x(x^2+4)(x+4)}{(x-2)(x+2)}$  5)  $\frac{4x-5}{x^3(x-3)}$  6)  $\frac{1}{2x+1}$  7)  $\frac{1}{5x-8}$
- 8)  $\frac{x+15}{(x+3)(x-4)(x+5)}$  9)  $\frac{4x-7}{(4x+5)(2x-3)}$  10)  $\frac{12m(m-6)}{2m+21}$  11)  $\frac{3}{20x+3}$
- 12)  $\left\{\frac{23}{15}\right\}$  13)  $\{2\}$  14)  $\{4\}$  15)  $\left\{-\frac{10}{3}, 1\right\}$  16)  $C_2 = \frac{CC_1}{C_1 - C}$
- 17)  $m = \frac{T}{g-f}$  18)  $DC = 6$  in. 19) It will take  $2\frac{2}{9}$  hours.
- 20) Leroy was driving at 64 mph and Juanita was driving at 73 mph.
- 21) The integers are 5 and 6.