C11 - 6.0 - Rationals Review

1) Simplify.

a) $\frac{12x^3}{3x} =$

b) $\frac{2x+6}{x+3} =$

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

d) $\frac{x^2-4}{x+2} =$

e) $\frac{x+7}{x+7} =$

f) $\frac{x-2}{x^2+2x-8} =$

g) $\frac{2(x+5)}{5+x} =$

h) $\frac{x^2-6x+8}{x+3} =$

i) $\frac{2x^2+5x+3}{x+1} =$

j) $\frac{x-5}{5-x} =$

k) $\frac{2x-2}{1-x} =$

l) $\frac{x^2-4}{4-x^2} =$

m) $\frac{(x-1)(x+1)}{(1-x)(-x-1)} =$

o) $\frac{3-x}{x+3} =$

2) Determine the undefined values (NPV's/Restrictions) for x.

a) $\frac{2}{x}$

b) $\frac{3}{x-1}$

c) $\frac{x+1}{2}$

d) $\frac{x+2}{2x-4}$

e) $\frac{3x+2}{x^2+9x-10}$

f) $\frac{6}{x^2+4}$

g) $\frac{1}{x^2-1}$

3) Multiply/Divide, Simplify.

a) $\frac{3x^3}{2} \times \frac{4}{x^2} =$

b) $\frac{1}{x+3} \times (x+2)(x+3) =$

c) $\frac{4}{x^2+5x+6} \times \frac{x+3}{8} =$

d) $\frac{4}{x^2-x-6} \times \frac{x^2+5x+6}{3} =$

e) $\frac{2x^2-x-6}{x+3} \times \frac{x^2-9}{x^2-4}$

f) $\frac{5}{5-x} \times (x-5) =$

g) $\frac{x}{2} \div \frac{2x^2-4x}{x+3} =$

h) $\frac{2x^2-x-6}{x+2} \div \frac{x^2-4}{x^2+5x+6}$

4) Simplify

a) $\frac{\frac{x}{3}}{\frac{5}{2}} =$

b) $\frac{x}{\frac{2}{3}} =$

c) $\frac{\frac{x}{3}}{3} =$

5) Add/Subtract/Mult/Div/Simp

a) $\frac{1}{2} + \frac{1}{3} =$

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

c) $\frac{1}{ab} + \frac{1}{ac} =$

d) $\frac{1}{a^2} + \frac{1}{ab} =$

e) $\frac{1}{a} + \frac{1}{a+2} =$

f) $\frac{x}{x-3} - \frac{x+2}{x-3} =$

g) $\frac{1}{x-2} - \frac{1}{2-x} =$

h) $\frac{x+3}{x^2-x-6} + \frac{3x+9}{x^2-4} =$

6) Simplify

a) $\frac{2-\frac{4}{x}}{3-\frac{1}{x^2}} =$

b) $\frac{\frac{1}{x+3}-1}{x} =$

c) $\frac{\frac{1}{2}+\frac{3}{x+1}}{5-\frac{1}{x+1}} =$

d) $\frac{\frac{1}{x+2}+\frac{1}{x}}{\frac{1}{x}-3} =$

7) Solve

a) $\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$

b) $\frac{x}{x+3} - 2 = -\frac{3}{x+3}$

c) $\frac{1}{x} + \frac{1}{(x+1)} = \frac{5}{6}$

d) $\frac{3x+4}{x+2} + \frac{1}{2} = \frac{5}{2x+4}$

e) $\frac{3x}{x^2-4} - \frac{12}{x+2} = -1$

f) $\frac{x}{x+4} = \frac{2-x}{x^2+3x-4} + \frac{1}{x-1}$

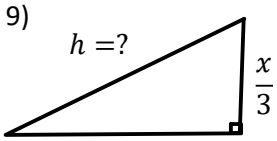
Simplify
NPV's
Multiply
Divide
Add/Subtract
Solve
Complex Fractions
Word Problems

C11 - 6.0 - Rationals Review

8) $A = x^2 - 4$ $\quad l = ?$

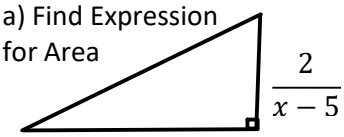
$$w = \frac{x^2 - 3x + 2}{x - 1}$$

9) $h = ?$



$$\frac{x - 1}{2}$$

10) a) Find Expression for Area



$$\frac{x^2 - 6x + 5}{x - 1}$$

11) $\frac{3}{x^2}$ a) Find the area.

$$\frac{2 - x}{x}$$

12) The golden rectangle has the following equation.

$$\frac{l}{w} = \frac{l + w}{l}$$

Final length if $w = 10cm$.

13) The formula for total resistance in ohms in parallel in an electric circuit is the following.

a) Find $R_{T||}\ if\ R_1 = 1, R_2 = 2$.

$$R_{T||} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$$

b) Find a simplified Expression for $R_{T||}\ if\ R_1$ & R_2 are consecutive integers.

14) Together

a) Two hoses together fill a pool in 2 hours. If only hose A is used, the pool fills in 3 hours. How long would it take to fill the pool if only hose B were used?

15) #'s : **Find two numbers whose sum is 12 and the sum of their reciprocals is $\frac{3}{8}$.**

16) The difference of a number and twice its reciprocal is -1. **#'s=1,-2**

17) Find two consecutive even numbers where when three is added to the smaller number and five is subtracted from the larger the quotient is $\frac{11}{5}$.

18) The sum of the reciprocals of:

a) Two consecutive odd integers is $\frac{8}{15}$.

b) Two consecutive integers is $\frac{13}{42}$. What are the integers?

19) Distance: Mary paddles down river 40km with a current of 6km/h. It takes her the same time to paddle up river 16km. What is the speed of the boat in still water?

20) An open top box with a square base has a volume of 60 m^3. Find the function for the surface area.