Name: _____

Review Ch. 12 for Final
M120 – Fall 2014

1. Find the domain of $f(x) = \dfrac{2x^2 + 12x + 16}{x^2 + 7x + 12}$

2. Simplify the following rational expression. $\dfrac{x^2 + xy - 4x - 4y}{x^2 - 3xy - 4y^2}$

3. Simplify the following complex fraction using the LCD method.

a) $\dfrac{\dfrac{5}{y-3} - \dfrac{4}{9-y^2}}{\dfrac{3}{y-3} - \dfrac{1}{3-y}}$

b) $\dfrac{\dfrac{y}{6} - \dfrac{1}{2y}}{\dfrac{3}{2y} - \dfrac{1}{y}}$

4. Add/subtract and simplify if possible.

a) $\dfrac{x-4}{x^2+5x+6} + \dfrac{5x+6}{x^2+4x+3}$

b) $\dfrac{8y^2}{y^3-16y} - \dfrac{4y}{y^2-4y}$

5. Simplify completely. $\dfrac{y^2 - 4y + 3}{y^2 + 3y - 18} \div \dfrac{y^2 - 1}{y^2 + 10y + 24}$

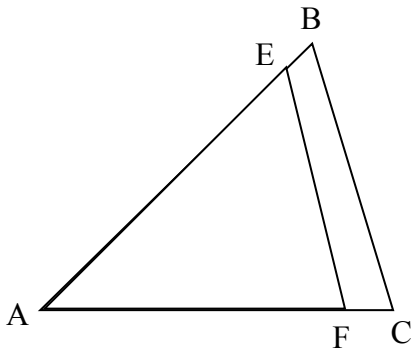
6. Solve. Don't forget about restrictions.

a) $\dfrac{x}{2} - \dfrac{x}{x - 4} = \dfrac{-4}{x - 4}$

b) $\dfrac{z^2 + 16}{z^2 - 16} = \dfrac{z}{z + 4} - \dfrac{4}{z - 4}$

7. Solve for **c**. $a = \dfrac{a - \mathbf{c}}{\mathbf{c} + d}$

8. Find x using your knowledge of similar triangles **and then** find the length of $\overline{BC}$. Show all work.



If BC = (2x – 5) feet & AC = 45 feet While EF = 7 feet and AF = (2x + 1) feet

9. According to Hooke's Law, the force needed to stretch a spring is proportional to the amount the spring is stretched. If fifty pounds of force stretches a spring five inches, how much will the spring be stretched by a force of 120 pounds?

Here are some problems that aren't from Ch. 12 to practice too.

10. Evaluate the following using the set of real numbers (show expansion):

a) $(36)^{1/2}$ b) $\sqrt[3]{-125}$

c) $\sqrt[4]{-16}$ d) $\sqrt{\frac{49}{144}}$

11. Simplify the following using complex numbers and the imaginary unit

a) $\sqrt{-48}$ b) $(\frac{5}{3} + \frac{1}{3}i)(\frac{5}{3} - \frac{1}{3}i)$ c) i^{34}

d) $\frac{7 - 4i}{5i}$

12. Use exponent rules to simplify the following. Write your answer without negative exponents. Show all work!

a) $(-5x^6)(7x^3)$

b) $\dfrac{63xy^3}{9x^5y}$

c) $(3x^6y)^3$

d) $(5x^5y^{-6})^{-2}$

e) $\left[\dfrac{15x^{-5}y^3z}{10x^2yz^{-5}}\right]^3$

f) $8x^6y^0$

g) $(8x^6y)^0$

h) $(-xyz)^{-1}$

i) $-xyz^{-1}$

15. Write the following using a rational exponent on each term in the radicand:

$\sqrt[4]{3x^2}$

16. Write the following as a radical expression: $2^{2/3}\,x^{5/3}$