Hom**ework #14** sections 8.5- 8.7; 9.1, 9.2 **Math 96** Name: _____

Show your work on this paper to receive credit. Please circle or highlight your answers.

Simplify the complex fraction.

1) [6.5] $\dfrac{-\frac{9}{19}}{-\frac{5}{19}}$

2) [6.5] $\dfrac{\frac{8m^9n^2}{3m}}{\frac{7m^4n^8}{4n^2}}$

3) [6.5] $\dfrac{\frac{1}{k+6}}{\frac{3}{k^2-36}}$

Solve the equation.

4) [6.6] $\dfrac{3x}{7}-8=x$

5) [6.6] $\dfrac{x-8}{6}=\dfrac{x+2}{8}$

6) [6.6] $\dfrac{x}{4}-\dfrac{9}{2}=\dfrac{x+7}{2}$

7) [6.6] $\dfrac{4}{y+5}-\dfrac{8}{y-5}=\dfrac{8}{y^2-25}$

Solve the equation:

8) [Extra-credit] $\dfrac{m+4}{m^2-2m-15}-\dfrac{4}{m^2+6m+9}=\dfrac{m-4}{m^2-2m-15}$

Solve for the specified variable.

9)[6.6] $\frac{1}{x}-\frac{1}{y}+\frac{1}{z}=5$ *Solve for x* (Hint: multiply by the LCD and factor out the x)

Solve the problem.

10) [6.8]A ranger caught and tagged 225 fish in the lake during one season. The next season, he caught 300 fish of which 22 were tagged. At that rate, approximately how many fish were in the lake?

11) [6.7] The numerator of a fraction is 9 times the denominator. If 2 is subtracted from the numerator, and added to the denominator, the resulting fraction is equal to $\frac{34}{6}$. Find the original fraction.

12.) [6.7] Reazen drove 120 miles north and then returned home again. On the way out, he averaged 20 mph faster than on the way back. The total trip took 5 hours. What was his rate on both legs of the trip? (Hint: $d=rt \qquad t=\frac{d}{r} \qquad r=\frac{d}{t}$)

13) [6.7] A man rode a bicycle for 12 miles and then hiked an additional 8 miles. The total time for the trip was 5 hours. If his rate when he was riding a bicycle was 10 miles per hour faster than his rate walking, what was each rate?

14) [6.7] Frank can type a report in 8 hours. James takes 3 hours to type it. How long will it take the two of them typing together?

15) One leg of a right triangle is 7 inches longer than the other leg. The hypotenuse is 1 inch longer than the longest leg. Find the length of the sides. (Hint: $a^2 + b^2 = c^2$)

Simplify the radical expression.

16) [8.1] $\sqrt{\frac{64}{121}}$

17) [8.1] $-\sqrt{81}$

Simplify and add or subtract wherever possible.

18)[8.3] $7\sqrt{48} + 7\sqrt{147}$

19) [8.3] $2\sqrt{5} + 9\sqrt{5}$

Simplify the expression by performing the indicated operations.

20) [8.3] $\sqrt{12} \bullet \sqrt{4} - 2\sqrt{75}$

21.) $\sqrt{(2-3)^2 - 3^2}$