Name: _____

Circle your answer for problems 1-3. <u>You must show correct work to receive credit.</u>

(8 pts) 1. Simplify.
$$5\left(4x^2 - 3x\right) - (2x - 5)^2$$

    A. $16x^2 - 15x + 25$

    B. $16x^2 - 5x - 25$

    C. $16x^2 - 35x + 25$

    D. $16x^2 + 5x - 25$

    E. None of the abov

(8 pts) 2. Express the following in algebraic notation:

       The total time, in hours, it takes a boat to travel 15 miles
       upstream and 15 miles downstream, if the rate upstream is
       x miles per hour and the rate downstream is y miles per hour.

    A. $\dfrac{15}{x} + \dfrac{15}{y}$

    B. $15x + 15y$

    C. $\dfrac{15}{x - y}$

    D. $15(x - y)$

    E. None of the abov

(8 pts) 3. If $a \ne 0$, $b \ne 0$, then for all a and b, $ab\left(a^{-1} + b^{-2}\right) =$

    A. $b + a$

    B. $\dfrac{ab}{(a + b)^2}$

    C. a

    D. $\dfrac{b^3 + a^2}{ab^2}$

    E. $\dfrac{b^2 + a}{b}$

Name: _____

Place your answer in the spaces provided. You must show your work to receive credit.

(8 pts) 4. Simplify. Express your answer as a fraction in lowest terms. Do not use a calculator.

$$2 - \frac{4}{5} \div 6 \ \frac{2}{7}$$

<div style="border:1px solid black; height:80px; width:350px;"></div>

(12 pts) 5. Factor completely.

   (6 pts) (a) $16a^2 - 36b^2$

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   (6 pts) (b) $12x^4 + 5x^3 - 3x^2$

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(8 pts) 6. Calculate. Express your answer in scientific notation.
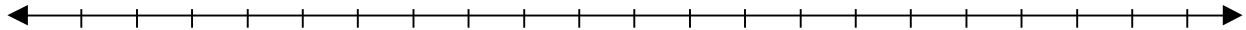
$$\frac{(86,000,000,000)(3.2 \times 10^{-17})}{430,000,000}$$

<div style="border:1px solid black; height:80px; width:350px;"></div>

Name: _____

Place your answer in the spaces provided. You must show your work to receive credit.

(12 pts) 7.

    (8 pts) (a) Write $|x + 2| \quad 5$ without the absolute value symbol and solve for x.

$$\boxed{}$$

    (4 pts) (b) Show the corresponding interval(s) on the real number line below.

(14 pts) 8. Simplify. Do not leave negative exponents in your answer.

    (8 pts) (a) $\dfrac{3x^{-2}}{x^{-9}y^{6}} \quad \dfrac{y^{4}}{15x^{4}y^{-1}}$

$$\boxed{}$$

    (6 pts) (b) $\dfrac{2x^{2}y^{0}}{6y^{-5}}{}^{4}$

$$\boxed{}$$

Name: _____

Place your answer in the spaces provided. You must show your work to receive credit.

(10 pts) 9. Find two consecutive odd integers such that the sum of the first and 1 more than 3 times the second is 123. (Name the variable, set up an equation, and solve.)

first odd integer =

second odd integer =

(12 pts) 10. A rectangle has a perimeter of 27 inches. Two times the width is 6 inches less than the length. Find the length and the width of the rectangle.
(Draw and label a picture, set up an equation, and solve.)

length =

width =

Name: _____