

Name: _____

Place your answers in the spaces provided. **There is no partial credit on problems 1-3.**You must show correct work to receive credit.

(8 pts) 1. Perform the indicated operation and simplify.

$$(4x^3 + 5x - 3) - (3x^3 - 2x^2 + 7x - 4)$$

(8 pts) 2. Find the x-intercept of the line given by the equation $y = -\frac{1}{2}x + \frac{3}{5}$.

x- intercept:

(8 pts) 3. Given the functions $f(x) = 5 - 2x$ and $g(x) = 2x^2 - 3$, find $(f - g)(-3)$.

$$(f - g)(-3) = \boxed{}$$

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(10 pts) 4. Solve the following inequality. Express your answer in terms of intervals.

$$4(1-2y) \geq 5(y+3)$$

(8 pts) 5. Find the equation of the line which passes through the point $(6, -7)$ and has slope of $-\frac{1}{3}$.Leave your answer in the form $y = mx + b$. $y =$ (10 pts) 6. Given the function $h(x) = \frac{2x^2 + 1}{x - 4}$, find and simplify the following:(4 pts) (a) $h(-2)$ $h(-2) =$ (6 pts) (b) $h(3a)$ $h(3a) =$

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(12 pts) 7. Solve the following system of equations. Express your answer as an ordered pair.

$$3a + 4b = 3$$

$$a = 2b - 4$$

(10 pts) 8. Perform the indicated operation and simplify.

(5 pts) (a) $(3x - 2y)^2$

(5 pts) (b) $(2a + 5b)(a - 3b)$

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- (12 pts) 9. A silversmith has two alloys, one containing 35% silver and the other containing 60% silver. How much of each should be melted and combined to obtain 118 grams of an alloy containing 50% silver? (Name the variable(s), set up an equation(s), and solve.)

amount of 35% =

amount of 60% =

- (14 pts) 10. The value of a machine two years after it was purchased was \$15,625. Six years after it was purchased, the value of the machine was \$8,125. Assume that the value, V , of the machine is linearly related to time, t , in years since it was purchased.

(10 pts) (a) Find a linear function, $V(t)$, that fits the data. (Hint: find two points)

$V(t) =$

- (4 pts) (b) Use your function from part (a) to find how long after it was purchased the machine was worth \$6,250.

how long =

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