Name: _____

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

(5 pts) 1. Circle all of the following correspondences that are functions:

A.

a → d
b → e
c → f
  → g

B.

C.

2 → 9
5 → 11
7 → 18
15

D.

E.

(7 pts) 2. Given $h(x) = \dfrac{x+3}{5x-1}$, find and simplify $h(x+2)$.

$h(x+2) = $ ⬚

(10 pts) 3. Solve the following system of equations using either the substitution or elimination method. Express your answer as an ordered pair.

$$5x - 3y = 3$$
$$3x - 2y = 1$$

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Place your answers in the spaces provided. <u>You must show correct work to receive credit</u>.

(12 pts) 4. Consider the line with equation $4x - 3y = 6$.

    (6 pts) (a) Find the slope and the y-intercept of the line.

slope = [   ]

y-intercept: [   ]

    (6 pts) (b) Graph the line of the set of axes below. You must label at least two points on your graph.
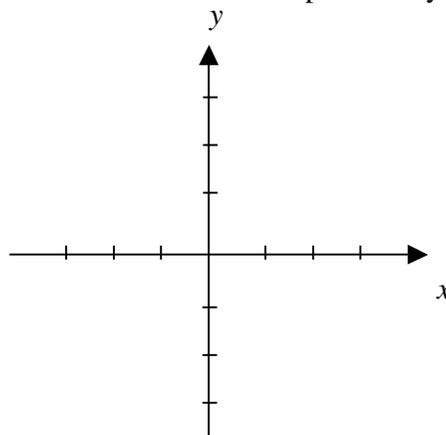
(16 pts) 5. Given $f(x) = x^2 - 1$ and $g(x) = -2x + 6$, find and simplify each of the following:

    (4 pts) (a) $(f - g)(-3)$

[   ]

    (4 pts) (b) $(f \cdot g)(2)$

[   ]

    (4 pts) (c) $\left(\dfrac{f}{g}\right)(x)$

[   ]

    (4 pts) (d) the domain of $\left(\dfrac{f}{g}\right)(x)$

[   ]

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(10 pts) 6. Total profit, P, is defined as total revenue minus total cost. Suppose total revenue is given by $R(x) = x^2 - 65x + 165$ and total cost is given by $C(x) = 6x + 1525$, where x is the number of widgets sold. Answer each of the following:

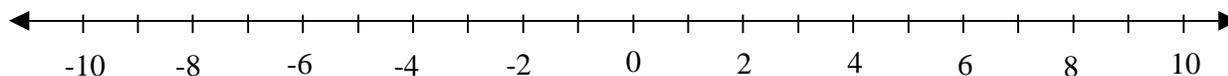(6 pts) (a) Find and simplify the total profit as a function of x.

$$P(x) = \boxed{}$$

(4 pts) (b) Use the function from part (a) to find the profit (or loss) from the sale of 95 widgets.

$$\boxed{}$$

(8 pts) 7.

(4 pts) (a) Solve the following inequality for x. Express your answer in interval notation.

$$4x - 9 \quad 7x$$

$$\boxed{}$$

(4 pts) (b) Graph your result from part (a).

$$\overset{\longleftarrow\!\longrightarrow}{\underset{\displaystyle -10 \quad\;\; -8 \quad\;\; -6 \quad\;\; -4 \quad\;\; -2 \quad\;\; 0 \quad\;\; 2 \quad\;\; 4 \quad\;\; 6 \quad\;\; 8 \quad\;\; 10}{\;}}$$

(10 pts) 8. Find an equation of the line that passes through the point $(-2, 7)$ and is perpendicular to the line $y = \dfrac{1}{5}x + 8$. Leave your answer in the form $Ax + By = C$ where A, B, and C are integers.

$$\boxed{}$$

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Place your answers in the spaces provided. <u>You must show correct work to receive credit.</u>

(10 pts) 9. Abby recently got a new job in sales where she must choose between two salary plans. Plan A will pay her a salary of $1200 per month plus a commission of 7% of her gross sales. Plan B will pay her a salary of $1050 per month plus a commission of 9% of her gross sales. Find all amounts of gross sales for which Abby should choose Plan B. (Name a variable, set up an **inequality**, and solve.)

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(12 pts) 10. At a recent basketball game, the Ramblers made 38 baskets and scored 93 points. The only types of baskets made to score the 93 points were two-pointers and three-pointers. Find the number of each type of basket made. (Name a variable(s), set up an equation(s), and solve.)

number of two-pointers = <div style="border:1px solid black; display:inline-block; width:200px; height:45px;"></div>

number of three-pointers = <div style="border:1px solid black; display:inline-block; width:200px; height:45px;"></div>

Name: _____