

Name: \_\_\_\_\_

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

(8 pts) 1. Find the slope of a line perpendicular to the line containing the points  $(-3,2)$  and  $(1,-5)$ .

A.  $\frac{7}{4}$

B.  $\frac{4}{7}$

C.  $-\frac{7}{4}$

D.  $-\frac{4}{7}$

E. None of the above

(8 pts) 2. Perform the indicated operations and simplify.

$$(3a^4 + 7a^3 - 2a^2 + 4) - 2(9a^3 - 5a^2 + 8)$$

A.  $a^4 - 11a^3 + 8a^2 - 12$

B.  $3a^4 - 11a^3 + 3a^2 - 4$

C.  $a^4 - 11a^3 - 12a^2 + 20$

D.  $a^4 - 11a^3 - 7a^2 + 12$

E. None of the above

(8 pts) 3. Solve the following system of equations for  $y$ :

$$3x + 7y = -18$$

$$x - y = 4$$

A.  $y = 1$

B.  $y = -\frac{3}{5}$

C.  $y = -\frac{11}{5}$

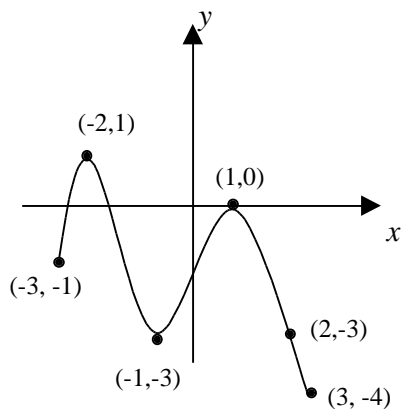
D.  $y = -3$

E. None of the above

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

(12 pts) 4. Given below is the graph of a function,  $y = f(x)$ . Find each of the following:



(4 pts) (a) Domain of the function.

(4 pts) (b) Range of the function.

(4 pts) (c) All values of  $x$  such that  $f(x) = -3$

$x =$

(12 pts) 5. Find an equation of the line whose  $x$ -intercept is 7 and has slope of  $-\frac{2}{3}$ . Leave your answer in general form ( $Ax + By = C$ , where  $A$ ,  $B$ , and  $C$  are integers).

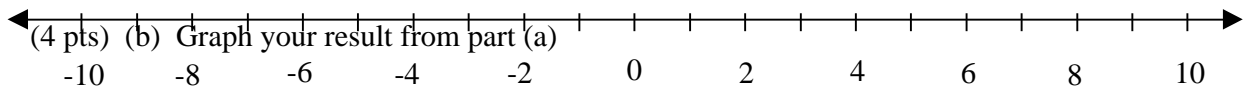
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(14 pts) 6.

(10 pts) (a) Solve the following inequality for  $x$ . Express your answer in terms of intervals.

$$3(4 - 2x) + 5 \geq 4x - 8$$



(14 pts) 7. Given the functions  $f(x) = 5 - 3x^2$  and  $g(x) = \frac{x + 3}{x}$ , find and simplify each of the following:

(4 pts) (a)  $(g + f)(-2)$

(4 pts) (b)  $(f \circ g)(3)$

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

- (12 pts) 8. The admission fee at an amusement park is \$1.50 for children and \$4.00 for adults. On a certain day, 2200 people entered the park, and the admission fees collected totaled \$5050. How many children and how many adults were admitted? (Name the variable(s), set up an equation(s), and solve.)

number of  
children =

number of  
adults =

- (12 pts) 9. Speedy Printing charges \$23 for printing 200 deluxe business cards and \$35 for printing 500 deluxe business cards. Assume that the relationship between the price,  $p$ , and the number of business cards printed,  $N$ , is linear. Find a linear function,  $N(p)$ , that fits this data. (Hint: find two points.)

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$$N(p) = \boxed{\phantom{000000}}$$