Exam 3

Name: \_\_\_\_

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

(8 pts) 1. Find the distance between the points (-4,1) and (2,-7).

- A. 10
- ₹10 В.
- *C*. 14
- *D*.  $\sqrt{10}$
- E. None of the abov

(8 pts) 2. Write the following as a single logarithm:

$$3\log_{2} x - \log_{2}(4x - 1) + 2\log(x + 5)$$

$$A. \quad \log \frac{x^{3}}{(4x - 1)(x + 5)^{2}}$$

$$B. \quad \log(x + 11)$$

$$C. \quad \log \frac{(x^{3})(x + 5)^{2}}{4x - 1}$$

$$D. \quad \log(x^{3} + (x + 5)^{2} - 4x + 1)$$

$$E. \quad \log \frac{(3x)(2x + 10)}{4x - 1}$$

(8 pts) 3. Find the center and the radius of the circle given by the equation:

$$x^2 + y^2 + 8x - 10y + 37 = 0$$

A. Cente(4, -5); radius  $\ge$ 

4x - 1

- B. Center(-4,5); radius = 4
- C. Center(4, -5); radius = 4
- D. Cente(-4,5); radius $\ge$
- *E.* None of the above

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

(10 pts) 4. Find an equation of the line which passes through the points (2, -5) and (-3, -1). Leave your answer in the form Ax + By + C = 0, where A, B, and C are integers.

(12 pts) 5. Given  $f(x) = 3x^2 - 4x - 5$  and g(x) = 2x + 7, find and simplify each of the following:

$$(f-g)(-1) =$$

 $\frac{f}{g}(2) =$ 



(4 pts) (c)  $(g \circ f)(x)$ 

(4 pts) (b)  $\frac{f}{g}$  (2)

(4 pts) (a) (f - g)(-1)

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

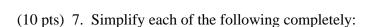
$$(g \circ f)(x) =$$

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

(12 pts) 6. Solve each of the following equations for x:

(6 pts) (a)  $\sqrt{2x-3} = 4$ 

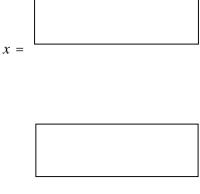
(6 pts) (b)  $\log_3(x-5) = 2$ 



(4 pts) (a)  $\sqrt{32} + \sqrt{50} - \sqrt{18}$  (Do not use a calculator to approximate <u>the answer.</u>)

(6 pts) (b) 
$$xy^{\frac{2}{3}} x^{\frac{6}{2}} x^{\frac{1}{2}}y^{\frac{8}{2}}$$

(10 pts) 8. Find the standard equation of the <u>vertical</u> parabola whose vertex is (-4,5) and passes through the point (1,-3). 3



x =

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

(10 pts) 9. The population of a certain city is growing exponentially. The current population is 15,525 and it is growing at the rate of 3.2% per year. Find the population of this city after 18 years. Round your answer to the nearest whole number.



population =

(12 pts) 10. Metro Trucking advertised the rental cost of their economy size moving truck as \$45 per day plus 20 cents per mile. For the same size truck, Champion Trucking charges \$50 per day plus 15 cents per mile. Find all mileages for which Champion Trucking will be less expensive than Metro Trucking for a <u>four-day</u> rental?
 (Name the variable, set up an inequality, and solve.)

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