

Math 1090 Section 5 Test2

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

Read all directions carefully and show all your work for full credit.

Each of the following questions is worth 10 points total. Your score on the exam will consist of the 10 best scores on the following 12 questions taken out of a total of 100 points. Good Luck!!!

1. Find all solutions to the following system of equations.

$$2x - y + z = 15$$

$$x + y + z = 4$$

$$-3x + 2y + 3z = -2$$

2. Fred deposits \$29,000 in a Bank account that has 5% interest compounded monthly, and Janet deposits \$30,000 in a bank account that has 5.05% interest compounded semi-annually. Find who has the most money after 2 years and after 20 years.

3. Find THE ONE solution to the equation  $\log_{x+2}(4x + 13) = 2$  and state why the other answer is not a solution.

4. Find the slope-intercept and general linear form of a line that passes through  $(5,-3)$  and is parallel to the line  $5x+7y=0$ . What would be the slope of a line perpendicular to both of the previous lines?

5. Find the vertex, x-intercepts, and y-intercept of the parabola  $H(x) = 2x^2 + 8x - 24$  and state whether it opens up or down.

6. Given that  $\log_3(x + 1) = a$  and  $\log_9(x - 4) = b$  find  $\log_{81} \frac{\sqrt{x+1}}{(x-4)^3}$  in terms of a and b.

7. The town of Winchester, Indiana is growing according to the equation  $P(t) = 3000(1.025)^{t-1970}$ . How many people are living in Winchester in 1995? At what time will the population of the city be 10,000?

8. Say you have the quadratic function  $T(x) = ax^2 + bx + c$ . If  $T(-1) = -9$ ,  $T(2) = -12$ ,  $T(0) = -4$  does the parabola open up or down?

9. Find all solutions to the equation  $\log_7(x + 1) + \log_7(x - 1) = 1$

10. Say that Farmer John wishes to maximize the revenue he will bring in from the sale of his sweet corn. Now he knows that at price  $p$  he can expect to sell  $q$  bushels of sweet corn, where  $q = 1000 - 25p$ . Remembering that Revenue=Price $\times$ Quantity sold what is the maximum revenue that Farmer John can get from his sweet corn?

11. Find an equation for 2 lines both passing through the point  $(-1,1)$  that have slope given by the following system of equations.

$$M_1 + 3M_2 = 10$$

$$2M_1 - 2M_2 = -12$$

12. Find all solutions to the equation  $3^{x^2+4x-2}27^{-x} = 9$ . Hint: might try taking the  $\log_3$  of both sides.

1. (10pts)		
2. (10pts)		
3. (10pts)		
4. (10pts)		
5. (10pts)		
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total		