

NAME: \_\_\_\_\_

# MATH 128 QUIZ 2 Fall 2009

This is due Monday, Oct 19<sup>th</sup>. PLEASE SHOW ALL WORK!

- 1.) (8 pts) One number is four less than three times the other.  
Find two numbers such that their product is a minimum.  
Find the minimum product.

1. \_\_\_\_\_

Min. Product: \_\_\_\_\_

- 3.) Divide and write in standard form:  $\frac{\sqrt{9} + \sqrt{-4}}{\sqrt{16} - \sqrt{-1}}$

3. \_\_\_\_\_

- 4.) (7 pts) Solve:  $x \geq \frac{x+6}{x+2}$ . Write your answer in interval notation.

4. \_\_\_\_\_

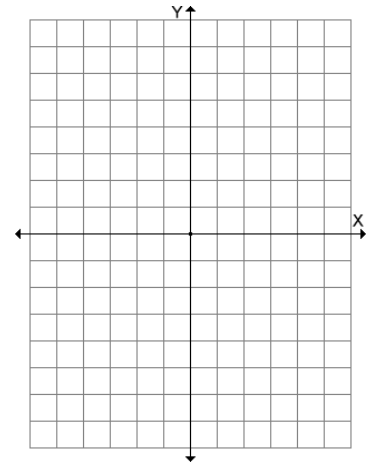
5.) ( 15 points) Graph  $y = -x^3(x-2)^2\left(x + \frac{3}{2}\right)$  Find the zeros and multiplicities, and behavior at each zero (what equation the graph resembles at each zero), and max. number of turning pts.

zero:\_\_\_\_\_ Multiplicity:\_\_\_\_\_ Behavior at zero:\_\_\_\_\_

zero:\_\_\_\_\_ Multiplicity:\_\_\_\_\_ Behavior at zero:\_\_\_\_\_

zero:\_\_\_\_\_ Multiplicity:\_\_\_\_\_ Behavior at zero:\_\_\_\_\_

y-int:\_\_\_\_\_ Degree:\_\_\_\_\_ Max turning pts:\_\_\_\_\_



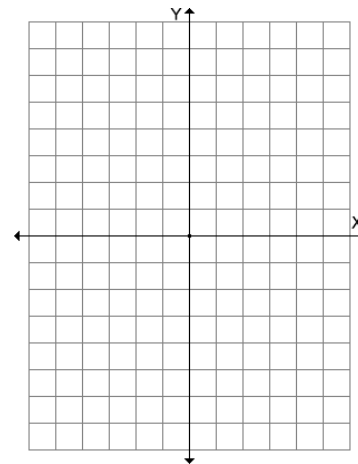
6.) (10 points) Use the following equation to find the following and graph:  $y = \frac{1}{x^2 - 2x}$

x-intercept:\_\_\_\_\_

y-intercept:\_\_\_\_\_

Vertical asymptote:\_\_\_\_\_

Horizontal asymptote:\_\_\_\_\_



7.) Use the given zero to find the other zeros:

$$f(x) = 2x^3 - 15x^2 + 86x - 203; \text{ zero: } 2 - 5i$$

7. \_\_\_\_\_

8.) (15 points) Use the following function to answer the questions:

$$f(x) = 4x^4 - 31x^2 - 21x + 18$$

a.) Use Descartes' Rule of Signs to find the number of possible positive and negative zeros.

positive: \_\_\_\_\_

negative: \_\_\_\_\_

b.) Use the Rational Zero Theorem to find the list of possible zeros.

b. \_\_\_\_\_

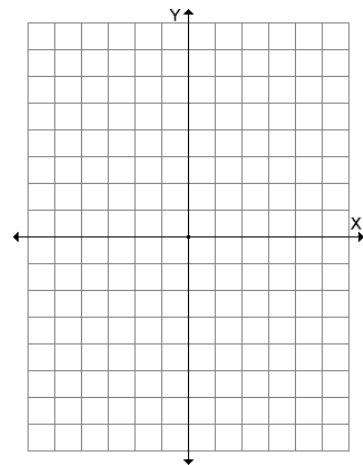
c.) Find the zeros using synthetic division.

c. \_\_\_\_\_

9.) Graph  $y = -3^{2+x} + 3$

Indicate the x-intercept. \_\_\_\_\_

Indicate the y-intercept. \_\_\_\_\_



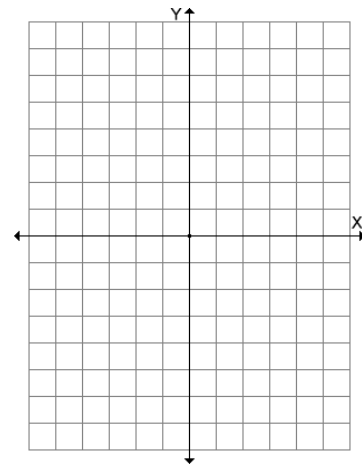
10.) Find the exact value using log properties:  $5^{\log_2 72 - \log_2 36 + \log_2 2}$   
Do not include a log in your answer.

10. \_\_\_\_\_

11.) Graph  $y = -\ln(3 - x)$

State the domain: \_\_\_\_\_

Indicate the x-intercept \_\_\_\_\_



12.) Fully expand and simplify: 12. \_\_\_\_\_

$$\log_5 \left( \frac{5y^3}{\sqrt[3]{x} \cdot (3x-4)^5} \right)$$

13.) Solve:  $\log_2(x-6) + \log_2(x-4) - \log_2 x = 2$  13. \_\_\_\_\_

14.) You are served a cup of coffee that has a temperature of  $185^\circ F$ . It is left to cool in a room that has a temperature of  $65^\circ F$ . After 2 minutes, the temperature of the coffee is  $155^\circ F$ . When will the temperature of the coffee be  $105^\circ F$ ? 14. \_\_\_\_\_

15.) A wine company needs to blend a California wine with a 5% alcohol content and a French wine with a 9% alcohol content to obtain 200 gallons of wine with a 7% alcohol content. How many gallons of each kind of wine must be used?

5%: \_\_\_\_\_

9%: \_\_\_\_\_