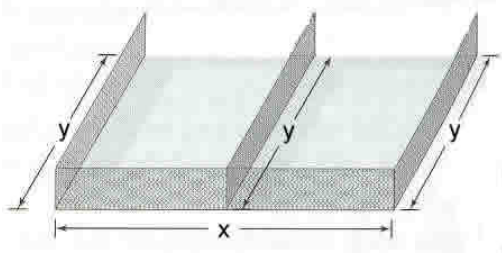


NAME: _____

MATH 128 TEST 2 SAMPLE

PLEASE SHOW ALL WORK!

1.) Twelve-hundred feet of fencing is available to enclose a rectangular playground and subdivide it into two smaller rectangular regions. One side of the playground is along the school building wall and requires no fencing as shown below. What is the maximum area that can be enclosed?



Area: _____

2.) Divide and write in standard form: $\frac{2i}{1+i}$

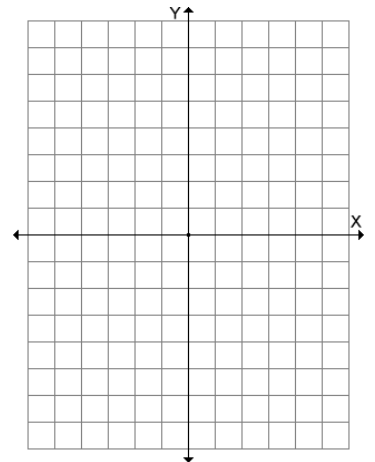
2. _____

3.) (15 points) Graph $y = (x - 1)(x + 1)^2$ Find the intercepts and multiplicities, and behavior at each zero (what equation the graph resembles at each zero), max. number of turning pts, degree.

zero: _____ Multiplicity: _____ Behavior at zero: _____

zero: _____ Multiplicity: _____ Behavior at zero: _____

y-int: _____ Degree: _____ Max turning pts: _____



4.) (10 points) Use the following equation to answer the below questions: $y = \frac{2x^2 - 2}{x^2 - 4}$.

4a.) Find the intercepts.

x-int: _____

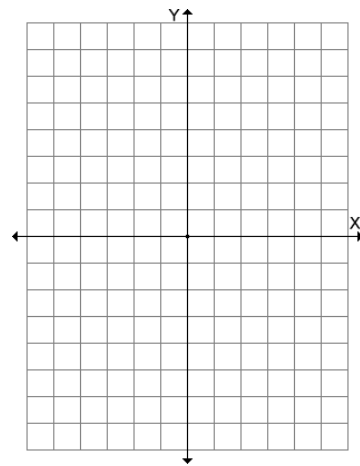
y-int: _____

4b.) Find the asymptotes.

Vertical: _____

Horizontal: _____

4c. Graph.



5.) (15 points) Given $f(x) = 6x^4 - 13x^3 - 70x^2 - 71x - 20$ and $f(5) = 0$ and $f\left(-\frac{4}{3}\right) = 0$,

answer the following:

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

positive: _____

negative: _____

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

b. _____

c.) Use synthetic division to find the other zeros.

c. _____

6.) Solve and write in interval notation: $\frac{(x+4)(x-1)}{(x+2)} \leq 0$

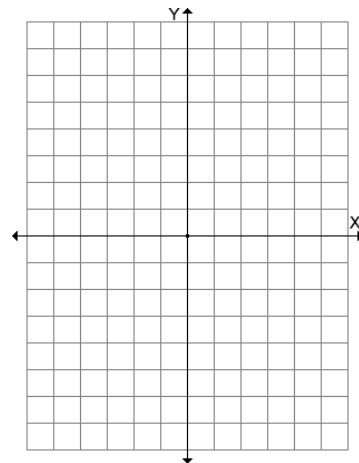
6. _____

7.) (10 points) Use the given zero to find the other zeros:

$f(x) = 2x^3 + 7x^2 + 32x + 112$ Zero: $-4i$

7. _____

8.) Graph $y = -2^{x+2} - 1$ (Please use dotted lines to show new set of axis.)



9.) Find the *exact* value using log properties (your answer should *NOT* contain logs): $\log_4 3 + 3 \cdot \log_4 2 - \log_4 6$.

9. _____

10.) Expand and write *without* exponents:

$$\ln \left[\frac{(x+1)^4}{x^3 \cdot \sqrt{x^2+1}} \right]$$

10. _____

11.) Solve: $\log_3(x-1) = 2 + \log_3(x+2)$

11. _____

12.) Krypton-91, an isotope, has a half-life of 10 seconds.
How much of a 3 gram sample remains after 16 seconds?

12. _____

13.) Las Vegas began with 2 Dunkin Donuts stores. It is estimated that 2.25 years later there will be 14 stores.

a.) Find the exponential growth function that describes the given information.

13a. _____

b.) How many stores are estimated to be in Las Vegas after 3.5 years? (Round to the nearest whole number)

13b. _____

14.) Solve the system:
$$\begin{aligned} 6 - 4y &= 5x \\ -3y + 4x &= 11 \end{aligned}$$

x: _____

y: _____