MATH 107 Quiz 4

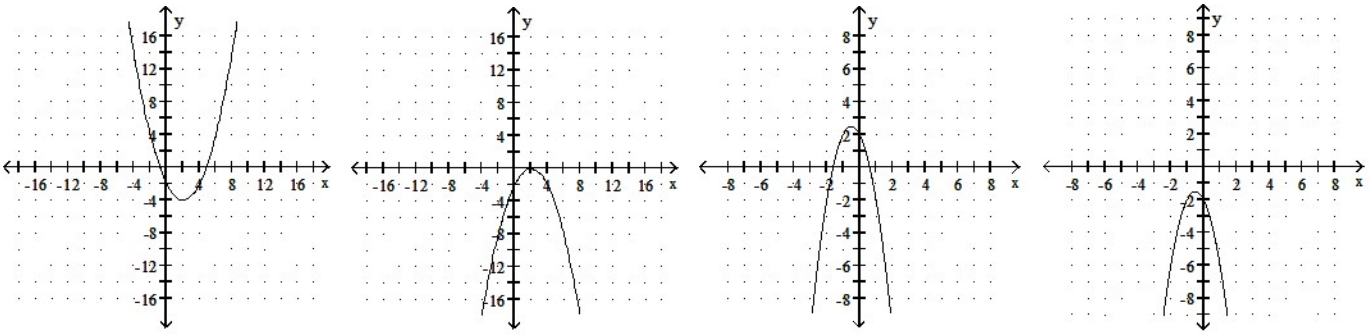
Name Click here to enter text.

Each question is worth 5 points. Questions 1 – 5 are multiple choice; you do not need to show your work. Short answers for Questions 6 – 10; show your work to earn full credit – highlight answers in yellow or draw a box around the answer. You can insert additional lines if needed.

Leave answers in exact form unless otherwise directed to approximate the results. Write all fractions in lowest form and round decimals to hundredths. Write answers using positive exponents except when using scientific notation. Simplify all radicals and rationalize the denominators. Write complex numbers in the form a + bi. Applied problems must have the variables identified and an equation for full credit.

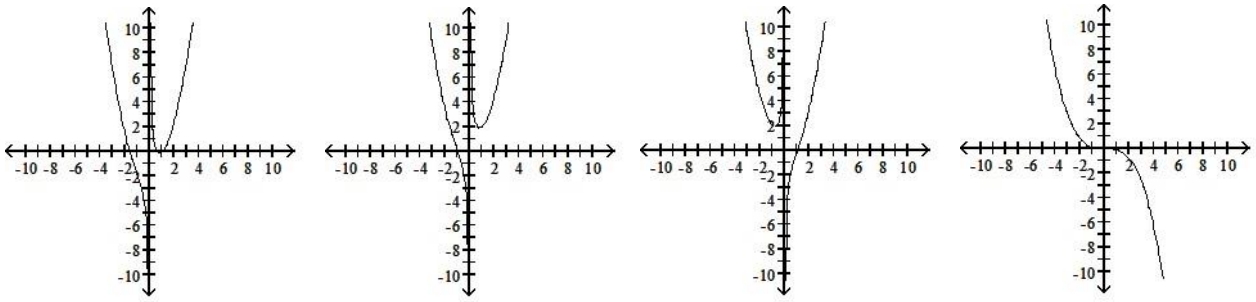
Check the box of the one alternative that best completes the statement or answers the question.

1.) Graph. $f(x) = -2x^2 - 2x - 2$ The four graphs are in the order of the multiple choice.



- ☐ First graph
- ☐ Second graph
- ☐ Third graph
- ☐ Fourth graph
- ☐ None of these

2.) Graph the function $f(x) = \frac{x^3+1}{x}$ showing all asymptotes (those that do not correspond to an axis) as dashed lines. List the x- and y-intercepts. Four graphs are in order of the multiple choice.



- ☐ x-intercept: (1, 0) , no y-intercept (first graph)
- ☐ x-intercept: (-1, 0) , no y-intercept (second graph)
- ☐ x-intercept: (1, 0) , no y-intercept (third graph)
- ☐ x-intercept: (0, 0) , y-intercept: (0, 0) (fourth graph)
- ☐ None of these

3.) Find a rational function that has vertical asymptotes x = -2, x = 7; x-intercept (5, 0).

- ☐ $f(x) = \frac{x+5}{x^2-5x+14}$
- ☐ $f(x) = \frac{x-5}{x^2-5x-14}$
- ☐ $f(x) = \frac{x+5}{x^2-5x-14}$
- ☐ $f(x) = \frac{x-5}{x^2+5x+14}$
- ☐ None of these

4.) Solve. $|5x + 8| < 3$

- ☐ $\left(-\infty, -\frac{11}{5}\right)$
- ☐ $\left(-\infty, -\frac{11}{5}\right) \cup (-1, \infty)$
- ☐ $\left(-\frac{11}{5}, -1\right)$
- ☐ $(-\infty,\ 5)$
- ☐ None of these

5.) Simplify. $(4i)^4$

- ☐ 4
- ☐ 4i
- ☐ -4i
- ☐ $4i^4$
- ☐ None of these

Short answers. You must show your work to earn full credit.
Highlight answers in yellow or draw a box around the answer.

6.) Find an equation of variation if y varies inversely as x and y = 7.75 when x = 0.16.

7.) Determine whether there is a maximum or minimum value for $f(x) = x^2 - 9x + 8$, and find that value.

8.) Simplify. Write your answer in the form of a+bi, where a and b are real numbers. $\frac{8-i}{-4+7i}$

9.) Solve by completing the square to obtain exact solutions. $x^2 + 5x - 5 = 0$

10.) The length of a rectangle is three inches more than the width. The area of the rectangle is 154 inches. Find the width of the rectangle.