

QUIZ 5 - MATH 111

Friday, March 15

YOUR NAME: _____

George Voutsadakis

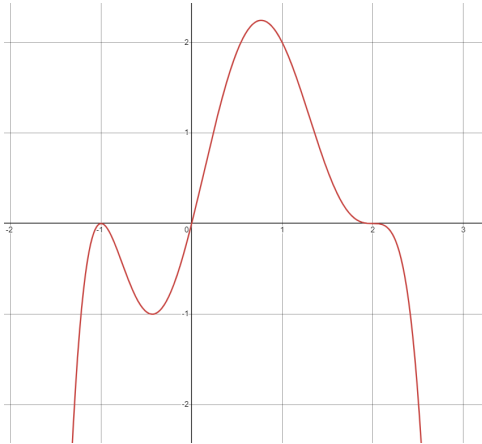
Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Consider the function

$$f(x) = -x^3(x + 1)(x - 2)^2.$$

- (a) Identify formally its end-behavior showing all steps.
- (b) Find its x -intercepts together with their multiplicities.
- (c) Use the data gathered to sketch its graph labeling all important points.

2. [4 points] Consider the graph of $y = f(x)$ shown.



(a) Identify the end-behavior.

(b) Find the x intercepts and their multiplicities.

(c) Find a formula for the function $y = f(x)$.

3. [4 points] Perform the synthetic division and write your answer in an appropriate form.

$$(x^4 - x^3 + 3x^2 + 1) \div (x + 2).$$