QUIZ 5 - MATH 112 Friday, February 19

YOUR NAME:_____ George Voutsadakis

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

1. (**Pollution**) The carbon monoxide level in a city $t$ years from now is predicted to be

$$P(t) = 0.02\sqrt{(12+2t)^3} + 1 \text{ ppm (parts per million).}$$

Find $P'(2)$, state its units and interpret your answer.

2. Consider the function

$$f(x) = -x^4 - 4x^3 - 4x^2 + 1.$$

(a) Compute the first derivative and find the critical points of $f$.

(b) Create the sign table for $f'(x)$ and show clearly the intervals where $f(x)$ is increasing/decreasing and the relative extrema (maxima/minima).

(c) Sketch the graph of $f(x)$. Your graph should be **clean** and all points of interest should be **labeled**.