QUIZ 2 - MATH 111 Friday, January 24

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] Find the domains of the following functions, showing all steps.

   (a) $f(x) = \dfrac{x+7}{x^2+4x-45}$

   (b) $f(x) = \sqrt{5-23x}$

2. [4 points] A tax code stipulates that incomes up to \$40,000 are to be taxed at the rate of 15%. For incomes exceeding \$40,000, the part of the income in excess of \$40,000 is to be taxed at the rate of 25%. Write a piece-wise defined function for the tax amount $T(x)$ owed by a taxpayer whose income is x dollars.

3. [4 points] Sketch the graph of the piece-wise defined function

$$f(x) = \begin{cases} x^2, & \text{if } x < 1, \\ 2, & \text{if } 1 \leq x < 3, \\ -x + 4, & \text{if } x \geq 3. \end{cases}$$