QUIZ 2 - MATH 112 Friday, September 3

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Read each problem **very carefully** before starting to solve it. 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. [2 points] Use the definitions and laws of exponents to write in the form ax^b:
   $$\frac{14x^5\sqrt[3]{x^2}}{2x^{-2}} =$$

2. [3 points] Find the domain of the rational function $f(x) = \dfrac{x-5}{x^3+7x^2-18x}$.

3. Suppose a small company has fixed costs 4 monetary units (MU) and that it costs 14 MUs to produce each item. Suppose, also, that the revenue from selling x items is $3x^2 - 10x + 25$ MUs.

   (a) [2 points] Give an expression for the cost function $C(x)$.

   (b) [3 points] Find the number of items that need to be produced to break even.

4. [5 points] Consider the quadratic function $f(x) = -x^2 + 4x$. Work by hand showing all steps.

   (a) Find the vertex.

   (b) Find the opening direction.

   (c) Find the y-intercept.

   (d) Find the x-intercepts.

   (e) Sketch the graph of the function.