Quiz 6
Math 111

Name:

Show *all* your work algebraically for each and simplify. No credit is given without supporting work.

1. [5] Solve for x in the following:
   $2^{4x-1} = 3^{1-x}$

2. [5] Solve for x in the following:
   $\log(x-16) = 2 - \log(x-1)$

3. [2] Determine whether each of the following expressions are polynomials.

   $x^3 + 3x^2 + \pi^x$ $\qquad\qquad$ $(x^2 + 5)(3x^2 - 2)$

4. [2] Find the remainder when $x^{10} + x^8$ is divided by $x - 1$.

5. [6] Use the fact that $(x - 1)$ is a factor of $x^3 + x^2 - 37x + 35$ to find all the *roots* of

$$f(x) = x^3 + x^2 - 37x + 35$$

   note: this problem was based off of 4.2 #73 but the numbers were not cooked enough.