Math 0115 Sec 0101 Summer 2007 Pretest

You do not need to put your name on this.

1. Classify the following numbers as: natural ($\mathbb{N}$), integer ($\mathbb{Z}$), rational ($\mathbb{Q}$), and/or real ($\mathbb{R}$) [use all terms that apply]:

$\sqrt{3}$: $.34\overline{5}$: -4 :

$.01001000100001\ldots$: $\frac{7}{9}$: π :

2. Simplify: $|-4|-|5|$.

3. If $A = \{x : x < 3\}$ and $B = \{x : x \geq -5\}$, then:

What is $A \cup B$? $A \cap B$? $B \setminus A$?

4. Simplify the following:

$8^{\frac{1}{3}} =$ $8^{-\frac{1}{3}} =$ $4^2 + 5^2 =$

$(3+6)^2 =$ $(x+y)^3 =$ $\frac{12x^4y^2}{16^{-2}y} =$

5. Factor the following:

$x^3 + x^2 + 4x + 4 =$ $x^2 + 6x + 9 =$

6. For the following expressions, tell whether or not each is a function. If not, say why. If so, describe the domain of the function:

$y = x^3 - 2x + 3$ $y = \pm\sqrt{x}$ $y = \frac{x^2+4x+4}{x+2}$

7. Find all solutions to the equation: $x^6 + 17x^3 + 60 = -4 + x^3$.

8. The sum of three consecutive odd integers is 105. Find the integers.