Practice Test 1. June 13, 2007

Math 0115 Sec 0101 Summer 2007

You may not use a calculator for this test.

[10] 1. Sketch the graph of $y = -5\sqrt{-x} + 3$. Be sure to label your graph appropriately.

[15] 2. A ball is tossed upward from the edge of a cliff and is allowed to fall all the way to the ground. At time t, the ball's height above the ground in feet is given by $h(t) = 64 + 4t - 16t^2$. (1) How high was the cliff? (2) At what time t does the ball hit the ground? (3) What is the maximum height of the ball? (4) Write the equation for $h(t)$ in standard form. (5) Sketch a graph of $y = h(t)$. Be sure to label your graph appropriately.

[10] 3. Find the solution set to the following inequality and express it in interval or set-builder notation:
$$1 \geq \frac{x-2}{5x}$$

[10] 4. Find all x which make the following true: $x - 2 = \sqrt{x-2}$.

[10] 5. Simplify the expressions, eliminating any negative exponents:

(1) $\quad \dfrac{12x^{-3}y^3z^2}{36x^2y}$ $\qquad\qquad$ (2) $\quad (x^2 + y^2)^{-1}((x+y)^2 - 2xy)$

[10] 6. Mark and Joe mow a lawn together in two hours. Mark's lawnmower can do the job three times as quickly as Joe's. How much time would it take for Joe to mow the lawn himself?

[10] 7. For each of the following, determine whether the equation describes y as a function of x. If not, say why. If so, what is the domain of the function?

(1) $\quad y^3 + x^3 = x$ $\qquad\qquad$ (2) $\quad y^4 + x^4 = 4$

[5] 8. Find the average rate of change of the function $g(x) = 8x^{-2}$ from $x = 1$ to $x = 4$.

[10] 9. For each of the below functions, determine if it is one-one. If not, explain why. If so, find the inverse function:

(1) $\quad y = 8 - x^3$ $\qquad\qquad$ (2) $\quad y = \dfrac{x^4}{6}$

[10] 10. Find *and state the domain of* (1) $(f + g)(x)$, (2) $f \circ g(x)$, and (3) $\frac{g}{f}(x)$, where $f(x) = (x - 2)^2$ and $g(x) = \sqrt{x}$.