Math 151 - Quiz 3

September 9, 2015

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Sitting in a tree, 48 feet above ground level, Sue shoots a pebble straight up with a velocity of 64 feet per second. The height of the pebble, in feet, after t seconds is given by

$$h(t) = -16t^2 + 64t + 48.$$

What is the maximum height attained by the pebble?

VERTEX AT $t = \frac{64}{32} = 2$

$h(2) = -16(4) + 64(2) + 48$

$= 112$ FT

2. (2 points) Refer to the problem above. After how many seconds will the pebble hit the ground (i.e., when is the height zero feet)?

$h(t) = 0$

$\Rightarrow t = \frac{-64 \pm \sqrt{64^2 + 4(16)(48)}}{-32} = \frac{-64 \pm \sqrt{7168}}{-32}$

$= -0.64575$ or 4.64575

≈ 4.65 SEC

3. (3 points) Consider the function

$$f(x) = \begin{cases} 3x - 7, & x < 5 \\ x^2 + x - 1, & x \geq 7 \end{cases}$$

(a) Evaluate $f(8)$.

$8^2 + 8 - 1 = 71$

(b) Evaluate $f(-2)$.

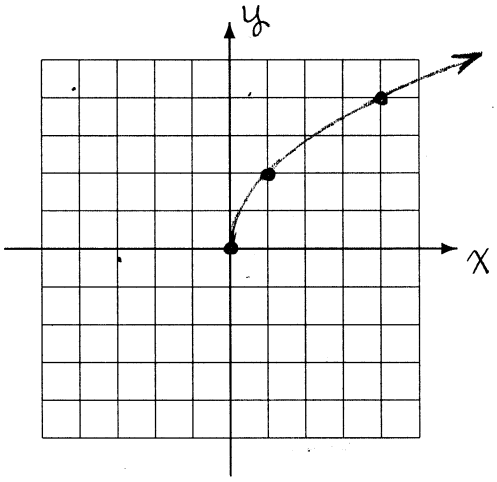
$3(-2) - 7 = -13$

(c) What is the domain of f?

$(-\infty, 5) \cup [7, \infty)$

4. (3 points) **Carefully sketch** the graph of each function.

(a) $g(x) = 2\sqrt{x}$



(b) $f(x) = -\frac{1}{2}|x|$