Review

Used 2009-3

(1.) $f(x) = 1000(1.3)^x$

Find instantaneous rate of change at x=0 using the three approximate methods, ensure that one of your answer is accurate to at least two digits.

(2.) Find exact instantaneous rate of change of the following

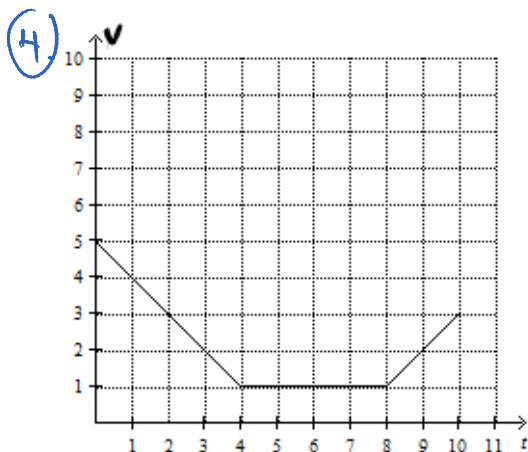$$f(x) = \frac{2}{x^2} \quad \text{at } x = 1$$

$$f(x) = 2x^3 - 1 \quad \text{at } x = 3$$

$$y = 4\sqrt{x-2} \quad \text{at } x = 5$$

(3.) Find absolute Max/Min for the following

a) $h(x) = -2\cos\frac{\pi}{4}(x-1) + 3$

on x ∈ [1, 7]

b) $g(x) = -(3.5)^{2x}$ on x ∈ [0, 2)

(4.)

a) Describe what is happening
b) Find the speed at 3 seconds
c) Find distance, in meters, travelled from 7 to 10 sec

d) Find average rate of change of speed for the whole graph
e) What does your answer in d) represent?
f) Sketch the a-t graph

5. Use the Difference Quotient to determine the value of a so that the instantaneous rate of change of the function

$h(x) = x^2 + 3x + 2$ at $x = a$ is -1.