

Name: _____

Date: _____

1) A ball is thrown into the air with a velocity of 30 feet per second, its height in feet after t seconds is given by $y = 30t - 16t^2$

a) Find the average velocity for the time period beginning when $t = 2$ and lasting

(3 Pts)

i) 0.5 s

j) 0.05 s

k) 0.01 s

b) Find the instantaneous velocity when $t = 2$

(1 Pt)

2) Find the inverse of the following functions.
(Must Show All the Appropriate Steps)

(6 points)

a) $y = \sqrt[3]{x+3} + 6$

b) $f(x) = \frac{2x+5}{x-4}$

(3 Points)

3) If $f(x) = 5x + \log(x + 10)$, find $f^{-1}(1)$

(3 points)

4) Express the function $F(x) = \frac{1}{\sqrt{x + \sqrt{x}}}$

as a composition of three functions (namely $(f \circ g \circ h)(x)$).

(Hint: Find $f(x)$, $g(x)$, and $h(x)$ so that $(f \circ g \circ h)(x) = \frac{1}{\sqrt{x + \sqrt{x}}}$)

Solve the following algebraically:

(4 points)

a) $2^x - 8^x = 0$

b) $e^{x^2} = (e^{5x}) \cdot \frac{1}{e^{-6}}$