Lecture Five Practice

Practice problems for Lecture Five

Abstract. *Practice problems for Lecture Five Content*

Problem. 1 : Find the derivative of the function using the definition of the derivative.

$$f(x) = -6x - 9$$

$$f'(x) = \boxed{}\ ?$$

Problem. 2 : Compute the limit of the following difference quotient:

$$\lim_{x \to -1} \frac{-\frac{5}{x} - 5}{x + 1} = \boxed{}\ ?$$

Problem. 3 : Determine if the limit approaches a finite number, ∞, $-\infty$, or does not exist. (If the limit does not exist, write DNE)

$$\lim_{h \to 0} \frac{-9\sqrt{h+4} + 18}{h} = \boxed{}\ ?$$

Problem. 4 : The position function of a ball thrown into the air with a velocity of 23 ft/sec and initial height of 1 foot is given by the function $s(t) = -16t^2 + 23t + 1$ where $s(t)$ is the height of

the ball above the ground after t seconds. Find the average velocity of the ball on the interval starting with $t = 4$ to the time 0.5 seconds later. $V_{ave} =$?

Problem. 5 : Find the average velocity of $s(t) = -10t^2 + 8t + 4$ from $t = 4$ to $t = 4 + h$.

$V_{ave} =$?

Problem. 6 : Use algebra to find the following limit

$$\lim_{h \to 0} \frac{15\left((h-8)^2 - 64\right)}{h} =$$?