

Math 1171

Homework #2

1.4 #5a, 1.5 #7,

1.6 #21, 22

$$\begin{aligned} \underline{1.4 \#5a} \quad & \frac{f(4.1) - f(4)}{.1} = \frac{275 - 16 \cdot 4.1^2 - (275 - 16 \cdot 4^2)}{.1} \\ & = \frac{-12.96}{.1} = -129.6 \text{ ft/sec} \end{aligned}$$

1.5 #7

a) 4 b) 5 c) 4 or 2 d) 4

1.6 #21

$$\lim_{h \rightarrow 0} \frac{(h-3)^2 - 9}{h} = \lim_{h \rightarrow 0} \frac{h^2 - 6h + 9 - 9}{h}$$

$$= \lim_{h \rightarrow 0} \frac{h^2 - 6h}{h} = \lim_{h \rightarrow 0} \frac{\cancel{h}(h-6)}{\cancel{h}}$$

$$= \lim_{h \rightarrow 0} h - 6 = -6$$

1.6 #22

$$\lim_{x \rightarrow 9} \frac{9-x}{3-\sqrt{x}} = \lim_{x \rightarrow 9} \frac{9-x}{3-\sqrt{x}} \cdot \frac{3+\sqrt{x}}{3+\sqrt{x}}$$

$$= \lim_{x \rightarrow 9} \frac{(9-x)(3+\sqrt{x})}{(3-\sqrt{x})(3+\sqrt{x})}$$

$$= \lim_{x \rightarrow 9} \frac{\cancel{(9-x)}(3+\sqrt{x})}{\cancel{9-x}} = \lim_{x \rightarrow 9} 3+\sqrt{x}$$

$$= 3+\sqrt{9} = 3+3 = 6$$