

Quiz # 6 key

63.

$$\#1 \quad \lim_{x \rightarrow 0} 15x \cot(x) = \lim_{x \rightarrow 0} 15 \cos(x) \frac{x}{\sin(x)}$$

(2)

$$= \lim_{x \rightarrow 0} 15 \cos(x) \cdot \lim_{x \rightarrow 0} \frac{1}{\frac{\sin(x)}{x}}$$

(1)

$$= 15 \lim_{x \rightarrow 0} \cos(x) \cdot \frac{1}{\lim_{x \rightarrow 0} \frac{\sin(x)}{x}} = 15 \cdot \frac{1}{1} = 15$$

(5)

#2

$$f(x) = \sin(\cos^2(x))$$

$$f'(x) = \cos(\cos^2(x)) \frac{d}{dx} (\cos^2(x))$$

(1)

$$= \cos(\cos^2(x)) \cdot 2(\cos(x))' \frac{d}{dx} (\cos(x))$$

(1)

$$= \cos(\cos^2(x)) \cdot 2 \cos(x) (-\sin(x))$$

(2)

$$= -2 \cos(\cos^2(x)) \cos(x) \sin(x)$$

(1)

(5)