Quiz #6 key

#1
\[
\lim_{x \to 0} 15 \times \cot(x) = \lim_{x \to 0} \frac{15 \cos(x)}{\sin(x)}
\]

\[
= \lim_{x \to 0} 15 \cos(x) \cdot \lim_{x \to 0} \frac{1}{\sin(x)}
\]

\[
= 15 \lim_{x \to 0} \cos(x) \cdot \frac{1}{\lim_{x \to 0} \sin(x)} = 15 \cdot \frac{1}{1} = 15
\]

#2
\[f(x) = \sin(\cos^2(x))\]

\[
f'(x) = \cos(\cos^2(x)) \cdot \frac{d}{dx} (\cos^2(x))
\]

\[
= \cos(\cos^2(x)) \cdot 2 \cos(x) \cdot \frac{d}{dx} (\cos(x))
\]

\[
= \cos(\cos^2(x)) \cdot 2 \cos(x) \cdot (-\sin(x))
\]

\[
= -2 \cos(\cos^2(x)) \cos(x) \sin(x)
\]