8.7 $\big(\sin(x)\big)' = \lim_{h \to 0} \dfrac{\sin(x+h) - \sin(x)}{h} =$

$\lim_{h \to 0} \dfrac{\sin(x)\,\cos(h) + \cos(x)\,\sin(h) - \sin(x)}{h} =$

$\lim_{h \to 0} \dfrac{\cos(x)\,\sin(h)}{h} + \dfrac{\sin(x)\big(\cos(h) - 1\big)}{h} =$

$\lim_{h \to 0} \dfrac{\cos(x)\,\sin(h)}{h} + \lim_{h \to 0} \dfrac{\sin(x)\big(\cos(h) - 1\big)}{h} =$

$\cos(x)\,\lim_{h \to 0} \dfrac{\sin(h)}{h} + \sin(x)\,\lim_{h \to 0} \dfrac{\cos(h) - 1}{h} = \cos(x) \cdot 1 + \sin(x) \cdot 0 = \cos(x)$