

Present neatly on separate paper. Justify for full credit. No Calculators.

Name \_\_\_\_\_ Score \_\_\_\_\_ 10 minutes  
1.

Find  $dy/dx$  if  $y = \frac{\sin x}{1 + \cos x}$ .

2.

Use a derivative to evaluate each limit.

(a)  $\lim_{h \rightarrow 0} \frac{\sin(\frac{\pi}{2} + h) - 1}{h}$       (b)  $\lim_{h \rightarrow 0} \frac{\csc(x + h) - \csc x}{h}$

3.

Find  $f''(\pi/4)$  if  $f(x) = \sec x$ .

---