Quiz #2 Math 101 Semester 042

Name:	I.D.	Section #	

1. Find the slope of $y = \pi\sqrt{8x} - \frac{1}{(2x)^2} + 2\cot \pi x$ at $x = 0.5$ *final answer is 4*

$$y'(x) = \frac{\pi 8}{2\sqrt{8x}} + \frac{2 \cdot 2}{(2x)^3} - 2\pi \csc^2 \pi x$$

$$y'(x) = \frac{2\pi}{\sqrt{2x}} + \frac{2 \cdot 2}{(2x)^3} - 2\pi \csc^2 \pi x$$

$$y'(0.5) = 2\pi + 2 - 2\pi (1)^2 = 4$$

2. If $f'(2) = 4$, $h(4) = 4, h'(4) = 1$, and $g(x) = f\{\frac{h(x)}{\sqrt{x}}\}$, then find $g'(4)$.

final answer is 1

$$g'(x) = f'\left\{\frac{h(x)}{\sqrt{x}}\right\} \cdot \frac{h'(x)\sqrt{x} - h(x) \cdot \frac{1}{2\sqrt{x}}}{x}$$

$$g'(4) = f'\left\{\frac{h(4)}{2}\right\} \cdot \frac{h'(4)2 - h(4)\frac{1}{4}}{4}$$

$$= f'\{4/2\} \cdot \frac{1 \cdot 2 - 4/4}{4} = f'(2) \cdot \frac{2-1}{4}$$

$$= 4 \cdot \frac{2-1}{4} = 1$$