Trig Derivatives

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$\frac{d}{dx}(\tan(x)) = \sec^2(x)$ $\frac{d}{dx}\sec(x) = \sec(x)\tan(x)$

$\frac{d}{dx}(\cot(x)) = -\csc^2(x)$ $\frac{d}{dx}[\csc(x)] = -\csc(x)\cot(x)$

**1. If $y = \tan(x) - \cot(x)$, then find y'.

2. Evaluate $\lim_{h \to 0} \frac{4\sec(x+h) - 4\sec(x)}{h}$.

3. If a particle moving along the x-axis has a velocity given by $v(t) = \frac{-6\cot(t)}{5t}$, find the acceleration.

4. Determine the point(s) at which the horizontal tangents occur on the graph of $y = 2\csc(x) + 3$ for $[0, 2\pi]$.