

### Lesson 6.3

1. Find the derivative of each function.

(a)  $y = \ln(\tan x)$

(b)  $y = \sec^3(3\theta)$

(c)  $y = t^2 \tan(\sqrt{t})$

2. Evaluate each integral.

(a)  $\int \sec^2(4t+1) dt$

(b)  $\int_0^{\pi/4} \sec x \tan x dx$

3. Evaluate each limit.

(a)  $\lim_{x \rightarrow 0} \frac{\sin(10x)}{\tan(5x)}$

(b)  $\lim_{x \rightarrow \pi} \frac{\cos(3x) + \sqrt{\frac{x}{\pi}}}{\sin(2x)}$