8. Use the quotient rule to compute the derivative of \( \frac{\sin x}{\cos x} \).

9. Find the exact value of \( \lim_{x \to 2} \frac{\sqrt{x^2 + 12} - 4}{x - 2} \).

10. Let the position of a particle be given by \( s = t^3 - 18t^2 - 24t \).
   
a. Find the velocity and acceleration of the particle at time \( t \).
   
b. Find the time(s) when the particle is at rest
   
c. Find the total distance traveled from \( t = 0 \) to \( t = 5 \)
   
d. Sketch a diagram of the motion of the particle.
   
e. Find a time when the particle is speeding up.

11. Find the slope of the graph of \( y = \sin x \) at \( x = \frac{3\pi}{4} \).

12. If \( f(5) = 3.4 \) and \( f'(5) = .68 \), Estimate the values of \( f(5.3) \) and \( f(4.8) \)