

1. Compute the derivative of each of these functions. Simplify the answer when possible.

(a)  $f(x) = \frac{1}{\sqrt{1+x^2}}$

(b)  $v(t) = \cos^2(3t)$

(c)  $h(x) = x\sqrt[3]{x^9+2}$

2. Find the equation of the tangent line to the graph of  $y = \sqrt{25-x^2}$  at  $x = 3$ .

3. Use Chain Rule and product rule to prove the quotient rule.

4. If  $h(x) = f(g(x))$ , find a formula for  $h''(x)$  in terms of  $f$ ,  $g$  and their derivatives.