

MA161 SEMESTER 1, CALCULUS: PROBLEM SHEET 9

1. Use the Chain Rule to differentiate the following functions.

(a) $f(x) = \sin(\sqrt[3]{x^3 + 3})$

(b) $f(x) = \ln((x^2 + 5)^{11})$

(c) $f(x) = \sqrt{\frac{x^2}{x^6 + 5}}$

(d) $f(x) = \cos(\cos(x^2))$

2. Let $f(x) = \cos x$. Find $(f^{-1})'(x)$.

3. Find the tangents to the function $f(x) = x^2 + x - 6$ at the points $x = -4$ and $x = 2$.

4. Find the tangent to the function $f(x) = 4 \sin^2(x)$ at the point $x = \frac{1}{6}\pi$.