Problem 1

Given the position function $p(t) = t^3 + 2t + 2$, find the velocity function, $v(t)$, and the acceleration function, $a(t)$.

Problem 2

Let $y = x^3 \sin(x)$. Find $\frac{dy}{dx}$.

Problem 3

Find $\dfrac{d}{dx}\left(\dfrac{\sin(x) + \cos(x)}{\sqrt{x} + 1}\right)$

Problem 4

Find $\dfrac{d}{dx}\Big((\tan(x) - \csc(x))(x^4 - x^{\frac{5}{6}})\Big)$

Problem 5

Let $f(\theta) = \tan(\theta) + 7\theta^2 + \frac{\sin(\theta)}{1+\cot(\theta)}$. Find $f'(\theta)$.