Q1. (5 marks) Find the average value of the function

\[ f(x) = |3x| + \sqrt{4 - x^2} \quad \text{on} \quad [-2,2]. \]

Q2. (5 marks) Find the slope of the tangent line to the graph of

\[ y = \int_{\sin 2x}^{\cos 2x} \frac{t^7}{\sqrt{1-t^7}} \, dt \quad \text{at} \quad x = \frac{\pi}{2} \quad \text{where} \quad 0 < x \leq \frac{\pi}{2}. \]

Q3. (5 marks) The rate of change of a particle moving along a straight line is given by \( S'(t) = \frac{2}{\sqrt{1-t^2}} \). Find the net change of the particle during the interval \( [0, \frac{1}{2}] \).