Problem 1

Find the following limits

1. \( \lim_{x \to -\infty} \sqrt{4x^2 + 3x + 2x} \)
2. \( \lim_{x \to \infty} \sqrt{4x^2 + 3x + 2x} \)

Problem 2

Find the equation of the line tangent to the curve at the given point of the following

1. \( y = x^3 - 3x + 1 \) at \( x = 2 \)
2. \( y = \frac{2x+1}{x+2} \) at \( x = 0 \)

Problem 3

Evaluate the following derivatives:

1. \( f(x) = 3x^2 - 4x + 1 \)
2. \( f(t) = 2t^3 + t \)
3. \( f(t) = \frac{2t+1}{t+3} \)
4. \( f(x) = \frac{4}{\sqrt{1-x}} \)

Problem 4

Evaluate derivatives using product/quotient rule:

1. \( f(x) = \tan(x) \)
2. \( f(x) = \sec(x) \)
3. \( f(x) = \csc(x) \)
4. (HARD) \( f(x) = \arcsin(x) \)