1. Evaluate the limit \( \lim_{x \to 1} \frac{x^5 + x - 2}{x - 1} \), if it exists.

2. Let \( f(x) = \begin{cases} 3 & \text{if } x \leq 0 \\ 3 - x^2 & \text{if } 0 < x < 3 \\ 6 - 4x & \text{if } x \geq 3 \end{cases} \). Is the function \( f \) differentiable at \( x = 3 \)? Why?

3. For what values of \( x \) does the graph of \( y = x^3 + 3x^2 + x + 3 \) have a horizontal tangent?
4. Differentiate $y = \frac{\sqrt{x} - 1}{\sqrt{x} + 1}$.

5. The position of a particle is given by the equation $s = f (t) = t^3 - 9t^2 + 15t + 10$ (where $t$ and $s$ are measured in seconds and meters respectively.) Find the total distance travelled by the particle during the first three seconds.