1. Evaluate the limits (a) [3 points] \[ \lim_{x \to -4^+} \frac{x + 3}{x + 4} \]
(b) [3 points] \( \lim_{x \to \infty} \frac{\sin^2 x}{x^2} \)
2. [4 points] Find an equation of the tangent line to the curve \( y = \sqrt{x} \) at the point \((4, 2)\).
bonus problem [5 points extra] Using the definition of derivative find the derivative of the function $f(x) = |x|$ on $(-\infty, 0) \cup (0, \infty)$. 