1. The function \( f(t) = \sqrt{t^2 + 8t} \) represents the position in feet of an object at time \( t \) seconds. Find the average velocity of that object between \( t = 1 \) and \( t = 2 \).

2. Compute the derivative function \( f'(x) \) using the definition\(^1\).

\[
f(x) = 3x^2 + 1
\]

— Write down your solutions BELOW this line, please. —

\(^1\)You should have memorized the definition by now. Still, if you have not, I am happy to provide you with it just this one time. Namely, the derivative of \( f(x) \) is the function \( f'(x) \) given by

\[
f'(x) = \lim_{h \to 0} \frac{f(x + h) - f(x)}{h}
\]

provided the limit exists.