The Derivative as a Rate of Change

Problem 1

Calculate the instantaneous rate of change of the function $f(x) = 16x^2$ at the point $x = 1$ using the definition.

Problem 2

The volume of water in a swimming pool t minutes after the pool has started to drain is

$$Q(t) = 50(20 - x)^2 \quad \text{(gallons)}.$$

How fast is the water running out at the end of 13 minutes?