1. (5) The point \( P(4, 2) \) lies on the curve \( f(x) = \sqrt{x} \).
   (a) If \( Q \) is the point \( (x, \sqrt{x}) \), find the slope of the secant line \( PQ \) (correct to four decimal places) for the values
   (i) \( x = 3.999 \)
   (ii) \( x = 4.001 \)
   (b) Estimate the slope of the tangent line at \( x = 4 \).
   (c) Use your estimate to find an equation for the tangent line at \( x = 4 \).

2. (5) Thoroughly explain how the concept of a limit can be used to help solve the “velocity problem” that we discussed in class.