The goal here is to approximate $\sqrt{x}$ for values near $x = 4$.
Let $f(x) = \sqrt{x}$.

1. (a) Show that the point $(4.41, 2.1)$ lies on the graph $y = f(x)$.

   (b) Use the points $(4, 2)$ and $(4.41, 2.1)$ to approximate $f'(4)$.

   (c) Using your approximation for $f'(4)$, find an equation for the line tangent to the graph of $f(x)$ at $x = 4$.

   (d) Plot $f(x)$ and the tangent line on the same set of axes.
       Do they look close to each other near $x = 4$?

2. Use your equation of the tangent line to approximate $\sqrt{4.01}$. How close is your answer to the "real" value?

3. Approximate $\sqrt{3.98}$. How close is your answer to the "real" value?