

Checkpoint: Differentials slash linear approximation slash tangent planes

Wolfram Alpha tells me that $\sqrt{(4.98)^2 - (3.03)^2} = 3.952151312892764231189305743300570249811443622895$

This is, however, way too precise to be useful. Show how to compute a reasonable estimate of this value **without a calculator** – I bet your answer will agree with the actual value in at least the first two or three decimal places.

Hints:

- Consider the function $f(x, y) = \sqrt{x^2 - y^2}$ and think about the title of this checkpoint.
- Do you remember how to multiply decimals by hand? To find $1.5 * 0.2$, you can compute $1.5 * 2$ or $15 * 2$, then move the decimal point in your result an appropriate number of places.