

Estimating Instantaneous Rates of Change From Graphs (2.3)



"I can estimate the instantaneous rate of change, and illustrate it graphically using an app. I can apply what I have learned in familiar and unfamiliar settings."

Click here to load today's [GeoGebra](#) applet.

1. Click "slope of secant"
2. Observe the slope of the secant line PQ, as you move the slider for "h" back-and-forth.
3. Slide "h" so that P moves toward Q, from the *right* side. Observe the value for the slope of the secant PQ.
4. Slide "h" so that P moves toward Q, from the *left* side. Observe the value for the slope of the secant PQ.

tangent
(simply put)

A **tangent** is the unique straight line that most resembles the graph of a relation near and at a point on the relation.

5. Do **NOT** click "slope of tangent". Predict what the slope of the tangent line is at point P.
6. Now click "slope of tangent". If your prediction in Step 5 is not very close or equal to this value, repeat Steps 1 to 5.
7. How is estimating the slope of the tangent at point P like estimating the instantaneous rate of change at point P?

MathSIP! Page 91 #1* + question below

*Use [GeoGebra](#) only. Do not sketch in your notebook

Given $y = f(x)$, determine a formula that gives the exact slope of the tangent line at $x = a$.