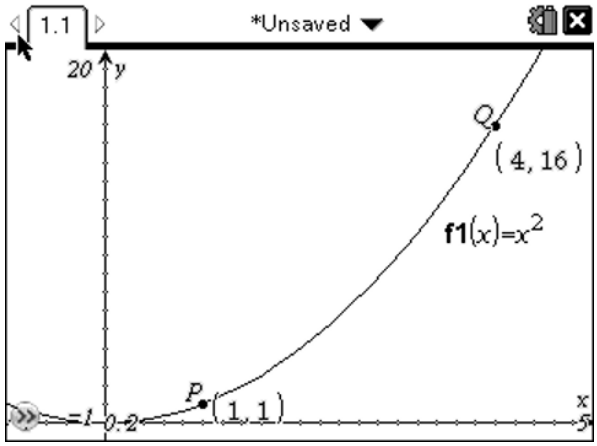
2.4 Slope of a Tangent Line
Instantaneous Rate of Change

What is a secant line? What does the slope of the secant line represent?

What is a tangent line? What does the slope of the tangent line represent?



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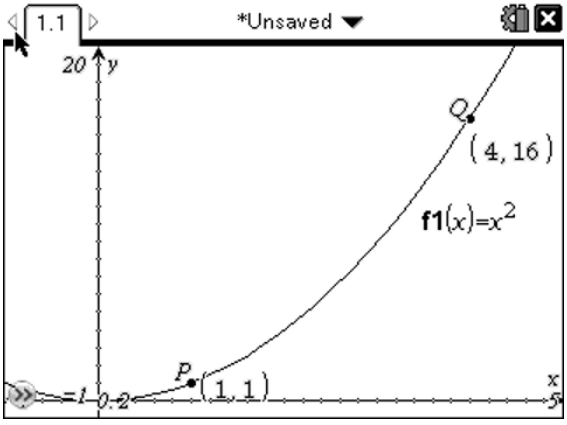
Estimate the instantaneous velocity at t=1



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Find the exact instantaneous velocity at t=1

$$\lim_{h\to 0}\frac{f(1+h)-f(1)}{h}$$

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Slope of a curve at x = a: $$\lim_{h\to 0}\frac{f(a+h)-f(a)}{h}$$

provided the limit exists

Find the equation of the tangent line and the normal line to the parabola $y=x^2$ at x=2.

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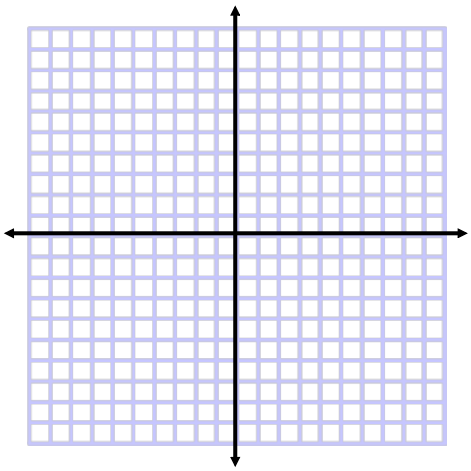
Sketch the graph:

$$f(x)=\begin{cases}3-x, & x<2\\ \frac{x}{2}+1, & x\geq 2\end{cases}$$

does the curve have a tangent line at x = 2?



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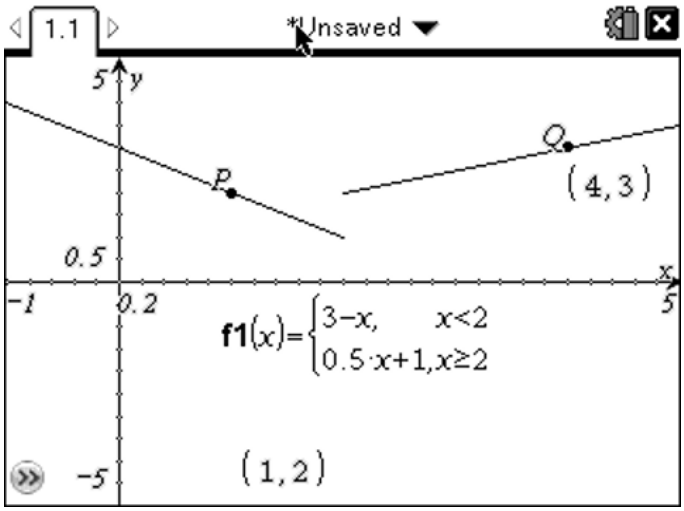

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