3.2 Differentiability - can you find the derivative?

A function will not have a derivative at a point (*a*,*f* (*a*)) if the slopes of the secant lines fail to approach a limit as *x* approaches *a*.

Let's investigate several functions
(using differentiability)

corner $y = |x| + 3$

cusp $y = x^{\frac{2}{3}}$

vertical tangent $y = \sqrt[3]{x}$

discontinuity $y = \begin{cases} 1, x > 0 \\ -1, x < 0 \end{cases}$

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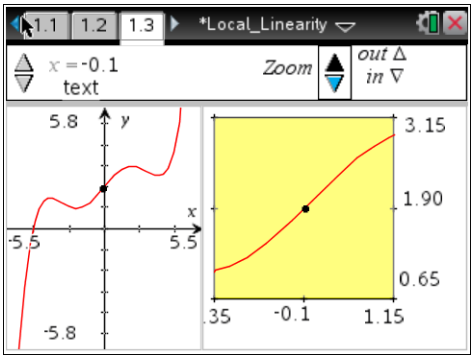
Local Linearity

A good way to think of differentiable functions is that they are locally linear.

Use Local_Linearity.tns to explore and write a definition of "locally linear"



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Derivatives on your calculator:

numeric: numerical derivative

symbolic
(CAS)

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Differentiability implies continuity

is the converse true?

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