LS30A - Lab 5

Aaron

Review about derivatives

1. **What are the 3 concepts of a derivative we've discussed? Explain them briefly. Include a sketch or equation if that would be helpful.**

    a. Instantaneous rate of change

    b. Slope of tangent

    c. Linear approximation

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1. **What are the 3 concepts of a derivative we've discussed? Explain them briefly. Include a sketch or equation if that would be helpful.**

   a. Instantaneous rate of change
   limit of average rate of change as delta-t approaches 0 $\lim_{\Delta t \to 0} \frac{f(t_0+\Delta t)-f(t_0)}{\Delta t}$

   b. Slope of tangent
   limit of secant as 2nd value of t approaches t0

   c. Linear approximation
   f(t) looks like a line when we zoom into (t0,f(t0)) $f(x) = f(x_0) + f'(x_0)(x - x_0)$

Review about derivatives

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point-slope form of the equation for a line: y-y0=m(x-x0).

$$m = \left.\frac{df}{dx}\right|_{x=3} = 4x\Big|_{x=3} = 12$$

$$y_0 = f(3) = 2 \times 3^2 = 18$$

$$y - 18 = 12(x - 3) \longrightarrow y = 12x - 18$$

Review about derivatives (Lab5)

1. Symbolic Calculation
2. Plot Lines and Curves
3. Differentiation