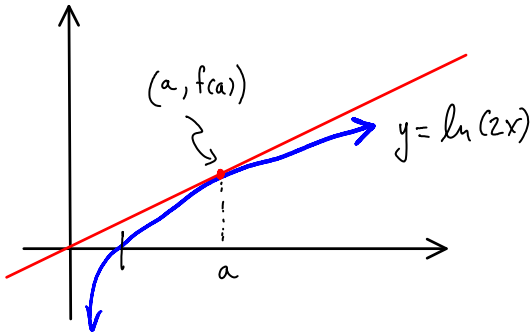


Additional Example - Log Diff.

Friday, October 01, 2010
3:43 PM

#31) A line with slope m passes through the origin and is tangent to $y = \ln(2x)$. What's the value of m ?



$$m = \frac{f(a) - 0}{a - 0} = \frac{\ln(2a)}{a}$$

$$m_{\text{Tan}} = f'(a) = \frac{2}{2x} \Big|_{x=a} = \frac{1}{a}$$

$$m = m_{\text{Tan}} \rightarrow \frac{\ln(2a)}{a} = \frac{1}{a} \rightarrow \ln(2a) = 1$$

$$2a = e$$

$$a = \frac{e}{2}$$

$$m = \frac{1}{a} \quad \leftarrow \text{so } \boxed{m = \frac{2}{e}}$$

HW p 179 #32, 46, 48; p 184 #83