3.9a Derivatives of Exponential Functions

$$y = e^x$$

$$y' =$$

general form:

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Find $\frac{dy}{dx}$

1. $y = e^{x+x^2}$

2. $y = x^2e^x - e^{\sqrt{3x}}$

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Derivative of $\frac{d}{dx}\left(2^x\right)$

using properties of exponents and logs $2^x = e^{x\ln 2}$

$$\frac{d}{dx}\left(2^x\right) = \frac{d}{dx}\left(e^{x\ln 2}\right)$$

Derivative of $y = a^x$

general:

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The spread of a cold at AFHS is modeled by $y = \frac{1000}{1+3^{3-t}}$

How fast is the flu spreading after 3 days?

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At what point on the graph of $y = 2^t - 1$

does the tangent line have a slope of 15?

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Ms. Apezteguia removes a cold soda from her fridge and leaves it on her desk.

Its temperature T after sitting on the desk is: $T = 72 - 30(.98)^t$

At what time is the soda warming the fastest?

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