

Student Name: _____

Score: _____

Derivatives of Exponential Functions

Find the derivatives of exponential functions:

$$y = 2^x$$

$$y = b^x$$

$$y = 43^{\sqrt{x}}$$

$$y = 5^{\frac{3x}{2}}$$

$$y = \left(\frac{5}{2}\right)^{\cos x}$$

$$y = \left(\frac{3}{2}\right)^x$$

$$y = \left(\frac{1}{2}\right)^{3x}$$

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Answer key

Derivatives of Exponential Functions

$$\frac{dy}{dx} = 2^x \ln 2$$

$$\frac{dy}{dx} = b^x \ln b$$

$$\frac{dy}{dx} = \frac{\ln 43 \cdot 43^{\sqrt{x}}}{2 \sqrt{x}}$$

$$\frac{dy}{dx} = 2x \cdot 7^{x^2} \ln 7$$

$$\frac{dy}{dx} = \frac{3 \cdot 5^{\frac{3x}{2}} \ln 5}{2}$$

$$\frac{dy}{dx} = \frac{-(\ln 5 - \ln 5)}{2}$$

$$\frac{dy}{dx} = \frac{(\ln 3 - \ln 3)}{2^x}$$

$$\frac{dy}{dx} = \frac{1}{2^{3x}}$$

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$\ln 3$

$(13)^{\sin x}$