***Solution*** ***Section* 2.8 – Derivatives of Logarithmic & Exponential Functions**

***Exercise***

Find the derivative of 

***Solution***







***Exercise***

Find the Derivatives of 

***Solution***







***Exercise***

Find the Derivatives of 

***Solution***











***Exercise***

Find the Derivatives of 

***Solution***

 ***Product Property***



 ***Power Property***

 ***Differentiate***



***Exercise***

Find the Derivatives of 

***Solution***







***Exercise***

Find the Derivatives of 

***Solution***

 ***Quotient Rule***

 ***Product Rule***

 ***Power Rule***



***Exercise***

Find the Derivatives of 

***Solution***

 

***Exercise***

Find the Derivatives of 

***Solution***

Let u = x2 – 4 





***Exercise***

Find the derivative 

***Solution***





***Exercise***

Find the derivative 

***Solution***





***Exercise***

Find the derivative 

***Solution***







***Exercise***

Find the derivative 

***Solution***









***Exercise***

Find the Derivatives of 

***Solution***

 





***Exercise***

Find the Derivatives of 

***Solution***











***Exercise***

Find the derivative of 

***Solution***







***Exercise***

Find the derivative of 

***Solution***





***Exercise***

Find the derivative of 

***Solution***





***Exercise***

Find the derivative of 

***Solution***





***Exercise***

Find the derivative of 

***Solution***







***Exercise***

Find the derivative of 

***Solution***







***Exercise***

Find the derivative 

***Solution***

 





***Exercise***

Find the derivative 

***Solution***

 





***Exercise***

Find the derivative 

***Solution***









***Exercise***

Find the derivative 

***Solution***









***Exercise***

Find the derivative 

***Solution***

 ***Power Rule***

 

***Exercise***

Find the derivative 

***Solution***



 ***Power Rule***

 

***Exercise***

Find the derivative 

***Solution***

 ***Power Rule***



 

***Exercise***

Find the derivative 

***Solution***







***Exercise***

Find the derivative 

***Solution***



***Exercise***

Find the derivative of 

***Solution***











***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative 

***Solution***

 



***Exercise***

Find the derivative 

***Solution***

 





***Exercise***

Find the derivative 

***Solution***



***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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Find the derivative of 

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Find the derivative 

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***Exercise***

Find the derivative 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

***Solution***







***Exercise***

Find the derivative of 

***Solution***



















***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the Derivatives of 

***Solution***

 

***Exercise***

Find the derivative 

***Solution***



***Exercise***

Find the derivative 

***Solution***



***Exercise***

Find the derivative 

***Solution***

 ***Power Rule***

 

***Exercise***

Find the Derivatives of 

***Solution***











***Exercise***

Find the Derivatives of 

***Solution***







***Exercise***

Find the Derivatives of 

***Solution***







***Exercise***

Find the Derivatives of 

***Solution***











***Exercise***

Find the Derivatives of 

***Solution***



***Exercise***

Find the Derivatives of 

***Solution***





***Exercise***

Find the Derivatives of 

***Solution***



***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***

 









***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***































***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***





















***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***













***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***









***Exercise***

Find the derivative of 

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Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

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***Exercise***

Find the derivative of 

***Solution***

 

***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***







***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***















***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***



 







***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***













***Exercise***

Use logarithmic differentiation to find the derivative of 

***Solution***











***Exercise***

Find the second derivative of 

***Solution***





***Exercise***

Find the equations of the tangent lines to  at the points (0, 1)

***Solution***



(0, 1) 





 



***Exercise***

Find the equations of the tangent lines to  at the points (1, *e*)

***Solution***



(1, *e*) 

 



***Exercise***

Find the equations of the tangent lines to  at 

***Solution***









⇒ 

 



***Exercise***

Find the equation of the tangent lines to  at the points (0, 4)

***Solution***





 



***Exercise***

The following formula accurately models the relationship between the size of a certain type of tumor and the amount of time that it has been growing:



where *t* is in months and is measured in cubic centimeters. Calculate the rate of change of tumor volume at 80 months.

***Solution***











***Exercise***

A yeast culture at room temperature (68° *F*) is placed in a refrigerator set at a constant temperature of 38° *F*. After *t* hours, the temperature *T* of the culture is given approximately by



What is the rate of change of temperature of the culture at the end of 1 *hour*? At the end of 4 *hours*?

***Solution***







***Exercise***

A mathematical model for the average age of a group of people learning to type is given by



Where  is the number of words per minute typed after *t* *hours* of instruction and practice (2 hours per day, 5 days per week). What is the rate of learning after 10 *hours* of instruction and practice? After 100 *hours*?

***Solution***





After 10 *hours* of instruction and practice, the rate of learning is 0.6 words/minute per hour of instruction and practice.



After 100 *hours* of instruction and practice, the rate of learning is 0.06 words/minute per hour of instruction and practice.

***Exercise***

The population of coyotes in the northwestern portion of Alabama is given by the formula, where *t* represents the time in years since 2000 (the year 2000 corresponds to  Find the rate of change of the coyote population in 2013 .

***Solution***

  



 

