***Solution Section* 3.4 – L’Hôpital’s Rule**

***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***

 



***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***





***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***





***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***





***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***





***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***



 







***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***







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***Solution***











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Apply l’Hôpital Rule to evaluate 

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***Exercise***

Apply l’Hôpital Rule to evaluate 

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Apply l’Hôpital Rule to evaluate 

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Apply l’Hôpital Rule to evaluate 

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***Exercise***

Apply l’Hôpital Rule to evaluate 

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***Exercise***

Apply l’Hôpital Rule to evaluate 

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***Exercise***

Apply l’Hôpital Rule to evaluate 

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***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***













***Exercise***

Apply l’Hôpital Rule to evaluate 

***Solution***







***Exercise***

Find 

***Solution***















***Exercise***

Find 

***Solution***

























***Exercise***

Find 

***Solution***

















***Exercise***

Find 

***Solution***













 













***Exercise***

Evaluate the following limit 

***Solution***







***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

***Solution***





***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

***Solution***



 Let 







***Exercise***

Evaluate the following limit 

***Solution***







***Exercise***

Evaluate the following limit 

***Solution***











***Exercise***

Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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Evaluate the following limit 

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Evaluate the following limit 

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***Exercise***

Evaluate the following limit 

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***Exercise***

The functions  are different functions. For example,  and . Determine whether  and  are intermediate forms and evaluate the limits.

***Solution***









































***Exercise***

Consider the function  . show that if , then  from below as ; if , then  from above as 

***Solution***









It suffices to determine whether  is  or  as 

Consider



Let 



















When 

If 

***Exercise***

Let , where 

1. What is the domain of *f* (in terms of *a*)?
2. Describe the end behavior of *f* (near the left boundary of its domain and as ).
3. Compute .
4. Show that *f* has a single local minimum at the point *z* that satisfies 
5. Describe how  varies as *a* increases.

***Solution***

1. 
2. 

















1. 









1. 





Let 











As *z* increases left side increases.

1. As 