MAC 2311 Hybrid Calculus I (B)

**Sections 2.1-2.3**

1.The position of an object moving along a line is given by the function *s*(*t*) = *t* 2 − 2*t*.

a) What is the average velocity over the interval [1, 2]?

b) What is the instantaneous velocity at the point *t* = 1?

2. Find the slope of the tangent line to at**.**

3. For defined below approximate in the table below. If the limit Does Not Exist (DNE), explain why.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *x* | 0.1 | 0.01 | 0.001 | 0.0001 | 0.00001 |
| *g*(*x*) | 2.9 | 2.99 | 2.999 | 2.9999 | 2.9999 |

4. For find two (2) of the most appropriate values of slopes of secant lines to make a conjecture about the slope of the tangent line at *x* =1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *x* | 0.97 | 0.99 | 1.00 | 1.01 | 1.03 |
| *h*(*x*) | 6.8809 | 6.9601 | 7 | 7.0401 | 7.1209 |

5. Evaluate: If the limit DNE explain:

 

a) b) c)

d) e) f)

g) h) i)

j) , k) , l)

 6.

7.

8.

9.

10.

11. For *x* real, find.

12. True/ False; the limit DNE if. Explain.