Unit 3: Graphing Activity with Derivatives

Directions: **For each of the following functions you must complete the following steps.**

a) Fill in the table of values provided to obtain specific points on the graph of each function.
b) Accurately sketch the graph of each function using these points on the coordinate plane provided.
c) Determine if the function is continuous. If not, please state the discontinuity.
d) Determine the derivative using the appropriate technique.
e) Determine the slope of the tangent line for each of the indicated points.
f) Draw in the tangent lines on the graph of the function at each of the points above.

#1. $y = -x^2 + 4x - 3$

a)   b/f)

X	y
-1	
0	
1	
2	
3	
4	
5	

c)   Is the function continuous? If not, state the discontinuity.

d)   Determine the derivative in the space below.

e)   Determine the slope of the tangent line for each of the points above.

Point (x,y)	Slope (m)

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#2. $y = \dfrac{3x}{x-1}$

a)

b/f)

x	y
-5	
-2	
0	
1	
2	
4	
7	

c)   Is the function continuous? If not, state the discontinuity.

d)   Determine the derivative in the space below.

e)   Determine the slope of the tangent line for each of the points above.

Point (x,y)	Slope (m)

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#3. $y = x^3 - 2x^2 - 5x + 6$

a)   b/f)

x	y
-3	
-2	
-1	
0	
1	
2	
3	
4	

c)   Is the function continuous? If not, state the discontinuity.

d)   Determine the derivative in the space below.

e)   Determine the slope of the tangent line for each of the points above.

Point (x,y)	Slope (m)

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#4. $y = 2\sin x$

a)   b/f)

x	y
-2π	
$-3\pi/2$	
$-\pi$	
$-\pi/2$	
0	
$\pi/2$	
π	
$3\pi/2$	
2π	

(radian mode!)

c)   Is the function continuous? If not, state the discontinuity.

d)   Determine the derivative in the space below.

e)   Determine the slope of the tangent line for each of the points above.

Point (x,y)	Slope (m)