AP Calculus AB

Review Derivative Test 1

**Find the derivative using the limit definition:**

1. y = x2 + 3x + 4 2. y = 

3. Let f(x) =  Find m and b so that f(x) is differentiable everywhere.

1. The given limit is a derivative, but of what function and at what x value?

a.  b. 

5. Find the equation of the tangent line to 2x3 – x2y + y3 – 1 = 0 at (2, -3).

6. Find y’’ of x2y3 = 1.

7. Find the equation of the tangent line to y =  at x = 1.

8. Find all points of *y = x3 – x2* where the tangent line is horizontal.

9. Find the x-coordinates of all points where the tangent line to *f(x) = x + 2cosx* is horizontal.

10. Find the equations of the tangent lines to y = x2 – 2x + 3 that pass through (1, -7).

**Determine where f(x) is differentiable:**

11. f(x) =  12. f(x) =  13. f(x) =  14. f(x) = 

**Determine the derivatives given the following information:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | f(x) | g(x) | f ‘(x) | g’(x) |
| 0 | -1 | 2 | 1 | -2 |
| 2 | 3 | -4 | 5 | 6 |

15. [f(g(x))]’ at x = 0 16. at x = 2 17.  at x = 0

Answers:

3. m = 4, b = -4 4.a f(x) = 2x3 and x = 5 b. f(x) = x2 and x = 2 5. y + 3 =  6. y’’=  7. y – ½ = - ½ (x-1)

8. (0, 0) and (2/3, -4/27) 9. x =  10. y – 11 = 6(x – 4) and y – 11 = -6(x + 2) 11. (

12. ( b/c not cont at -1 13. ( b/c vert tangent at 0 14 (b/c corner at 2

15. -10 16. -84 17. -1/2