

50 Point Quiz on Derivative Rules and Tangent Lines

- Steps to finding tangent line equations
 1. Find $f'(x)$ (the derivative)
 2. Substitute the x-coordinate of the point given into $f'(x)$ to find the slope of the tangent line (m).
 3. Use the slope of the tangent line and the coordinates of the point to find the equation of the tangent line.
 - Example: $x^6 - x^4 - 3x^3$; (2, 24)
 1. $6x^5 - 4x^3 - 9x^2$
 2. $6(2)^5 - 4(2)^3 - 9(2)^2 = 124 = m$
 3. $24 = 124(2) + b$
 $24 = 248 + b$
 $-248 \quad -248$
 $-224 = b$
 $y = 124x - 224$
- Position function formula for an object projected in the air/free falling object:
 - $S(t) = -16t^2 + v_0t + s_0$; s is height
- AROC – average rate of change (over a time period, like slope)
- IROC – instantaneous rate of change (Derivative)
 - $f'(x)$ is the instantaneous velocity as it is the derivative of the position function