MTH 1125 - Test 2 (2pm Class) - Pod A

Fall 2020

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Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\frac{d}{dx}\left[3x^5+3x^4+5x^3+6x^2+15x+24\sqrt{x}+6\right]=$

2. Compute: $\frac{d}{dx}\left[\left(5x^2+\sec\left(x\right)\right)\left(2x^3+6x\right)\right]=$

3. Compute: $\frac{d}{dx}\left[\frac{3x^4+6x^2+9}{4x^2+1}\right]=$

4. Compute: $\frac{d}{dx}\left[\left(6x^3+9x^2+4x\right)^6\right]=$

5. Given that $f(x) = 2x^2 + x - 5$, give the *equation* of the line tangent to the graph of $f(x)$ at the point $(2, 5)$.

6. Given that $w = 2x^2 + 3x$ and that $x = \sec(v)$; compute $\frac{dw}{dv}$ **using the Liebniz form of the Chain Rule.** (In particular, when doing this exercise, *write explicitly the Liebniz form of the chain rule that you are going to use.)*

7. Compute: $\frac{d}{dx}\left[\sec\left(4x^3 + 6x^2\right)\right] =$

8. Compute: $\frac{d}{dx}\left[\left(\frac{5x^2+12x}{4x^2+8x}\right)^6\right] =$

9. Compute: $\frac{d}{dx}\left[\sin^8\left(3x^3+9x\right)\right] =$

10. Given that $x^4+x^3y^4=\cos\left(y\right),\quad$ compute $\frac{dy}{dx}$

11. Given that $f\left(x\right)=3x^2-6x+5$, compute $f'\left(x\right)$ **using the definition of derivative.** (i.e., using the "limit process.")

Extra (Wow! 10 Points)

Given that $L'(x) = \frac{1}{x}$ (i.e., $\frac{d}{dx}[L(x)] = \frac{1}{x}$); compute $\frac{d}{dx}[L(x^2)]$