MTH 1125 - Test 2 (2pm Class)

Fall 2018

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Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\frac{d}{dx}\left[4x^5+6x^4+9x^3+12x^2+20x+16\sqrt{x}+2\right]=$

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

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

4. Compute: $\frac{d}{dx}\left[\left(6x^5+\sec\left(x\right)\right)^{10}\right]=$

5. Given that $f\left(x\right)=2x^2+4x+3$, give the *equation* of the line tangent to the graph of $f\left(x\right)$ at the point $\left(2,19\right)$.

6. Given that $y = \csc(t)$ and that $t = \frac{1}{2}x^2 + 4x$; compute $\frac{dy}{dx}$ **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: $\frac{d}{dx}\left[\cos\left(5x^3 + 8x^2 + 3\right)\right] =$

8. Compute: $\frac{d}{dx}\left[\left(\frac{3x^4+12x}{2x^4+8x}\right)^6\right] =$

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

10. Given that $L'(x) = \frac{1}{x}$ (i.e., $\frac{d}{dx}\left[L(x)\right] = \frac{1}{x}$); compute $\frac{d}{dx}\left[L\left(x^3\right)\right]$

11. Given that $f(x) = 4x^2 - 3x + 5$, compute $f'(x)$ **using the definition of derivative.** (i.e., using the "limit process.")

12. Given that $x^4 + y^4 = \sin(y)$, compute y'