MTH 1125 - Test 2 (9am Class)

Fall 2017

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Instructions. Show CLEARLY how you arrive at your answers.

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

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

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

4. Compute: $\frac{d}{dx}\left[\left(6x^{20}+8x^{10}\right)^5\right]=$

5. Given that $f\left(x\right)=2x^2-2x+1$, give the *equation* of the line tangent to the graph of $f\left(x\right)$ at the point $\left(2,5\right)$.

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

8. Compute: $\frac{d}{dx}\left[\left(\frac{2x^5+10x}{3x^3+9x}\right)^5\right] =$

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

10. Given that $S'(x) = \frac{1}{2S(x)}$; compute $\frac{d}{dx}\left[S\left(x^2\right)\right]$

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