MTH 1125 - Test 2 (12pm Class)

FALL 2016

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Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\frac{d}{dx}\left[\frac{1}{5}x^5 + x^4 + 3x^3 + 8x^2 + 25x + 8\sqrt{x} + 6\right] =$

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

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

4. Compute: $\frac{d}{dx}\left[(4x^{15} + 2x^{10})^5\right] =$

5. Given that $f(x) = 3x^2 - 2x + 1$, give the *equation* of the line tangent to the graph of $f(x)$ at the point $(1, 2)$.

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

8. Compute: $\frac{d}{dx}\left[\left(\frac{6x^2+9x}{2x^5+10x}\right)^4\right] =$

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

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

11. Given that $f(x) = 8x^2 - 2x + 3$, compute $f'(x)$ **using the definition of derivative.** (i.e., using the "limit process.")