MTH 1125 Test #2

SUMMER 2021

Pat Rossi Name _____

Show CLEARLY how you arrive at your answers.

1. Compute: $\frac{d}{dx}\left[4x^5+5x^4-6x^3+9x^2+10x+20\sqrt{x}+5\right]=$

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

3. Compute: $\frac{d}{dx}\left[\frac{4x^3+6x^2+12x+2}{8x^5+5x}\right]=$

4. Compute: $\frac{d}{dx}\left[(8x^4+8x^2+5)^{10}\right]=$ This is the derivative of a function raised to a power.

5. Given that $f(x) = 3x^2 + 2x + 4$, give the *equation* of the line tangent to the graph of $f(x)$ at the point $(2, 20)$.

6. Given that $t = 3x^2 + 2x + 5$ and that $x = \sin(w)$; compute $\frac{dt}{dw}$ **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: $\frac{d}{dx}\left[\tan\left(4x^2 - 3x + 2\right)\right] =$

8. Compute: $\frac{d}{dx}\left[\left(\frac{5x^4+10x^2+5}{8x^3+12x^2}\right)^{10}\right] =$

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

10. Given that $3x^4+8x^3y^3+5y^5=\cos\left(y\right),\quad$ compute $\frac{dy}{dx}$

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

Extra (Wow! 10 Points)