MATH 1525 CALCULUS I Quiz 5 Name:
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**Problem 1.** Find $\frac{dy}{dx}$.

**(a)** $y = x^3 + 3x^2 - 8x + 9$;

**(b)** $y = (x-2)(x+2)(x^2+4)$;

**(c)** $y = \sin(x)\sqrt{x}$;

**(d)** $y = \frac{1+x+x^2}{1+x^2+x^4}$;

**(e)** $y = \tan^2(x^3)$.

**Problem 2 (Extra Credit).** Find the maximum value of the function $f(x) = \sin x + \cos x$. Justify your answer.