

**Math 2315 - Calculus 2**  
**Cumulative Quiz #1 - 2021.01.22**

Name: \_\_\_\_\_

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1. Compute the following limit:  $\lim_{x \rightarrow 0} \frac{\sin(3x^2)}{5x^2}$
2. Compute the following derivative:  $\frac{d}{dx} \cos^3(x^2)$
3. Compute  $\frac{dy}{dx}$  for the implicitly defined function:  $y^2x + y^2 = x^2 - x$
4. Compute the following indefinite integral:  $\int \cos^3(4z) \sin(4z) dz$
5. Compute the following derivative:  $\frac{d}{dw} \int_{2w}^{3w^2-2w+1} \tan(t+1) dt$
6. Use the Fundamental Theorem of Calculus to compute the area between the curve and  $x$ -axis for  $f(x) = x^3 - x^2 - 2x$  on the interval  $[-1, 2]$ .
7. Evaluate  $\int x(x^2 + 1)^{1/4} dx$ .
8. Evaluate  $\int x(x + 1)^{1/4} dx$ .
9. State the definition of a function  $f(x)$  being continuous at  $x = a$ .
10. Express the average value of the function  $f(x)$  on the interval  $[a, b]$  in terms of a definite integral.