Math 252, Fall 2020 Name: _____

Quiz 1 Due: Midnight, Aug. 24

In **30 minutes** do as many as you can of the following problems, **without help** from any references, computing devices, or people.

Write your solutions either on a printout, or blank paper. If you use blank paper, do the problems on **2 sheets of paper, in the order given.** Upload a pdf of your solutions to **Gradescope, by midnight.**

1. Compute derivatives of the following:

   (a) $f(x) = \cos(x^2 + 2)$

   (b) $y = e^x(x^3 + x^{-3})$

   (c) $h(t) = \dfrac{\ln(t)}{t}$

   (d) $g(\theta) = \tan(3\theta)$

   (e) $y = \dfrac{x^3 - 17x^2 + 5}{x^2}$

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2. Compute the following integrals:

(a) $\displaystyle\int_0^2 x^2 - 3x + 1 \, dx$

(b) $\displaystyle\int \sqrt{x} + \frac{1}{x} \, dx$

(c) $\displaystyle\int (x^2 - 1)(x^2 + 1) \, dx$

(d) $\displaystyle\int_{-\pi/2}^{\pi/2} \cos\theta \, d\theta$

(e) $\displaystyle\int t \sin(t^2) \, dt$