Math 252, Fall 2020   Name: _____
Quiz 11   Due: Midnight, Nov. 16

In **30 minutes** do the following problems, **without help** from any references, computing devices, or people. Write your solutions on either a printout or blank paper. If you use blank paper, do the problems on **1 sheet of paper, in the order given.** Upload a pdf of your solutions to **Gradescope, by midnight.**

Show your work.

1.

    (a) Using the definition, find the Taylor series for the function $f(x) = \sqrt{x}$ at $a = 4$, writing out at least the first 4 terms.

    (b) Use the 2rd-degree Taylor polynomial at $a = 4$ to approximate $\sqrt{5}$.

    (c) If you used the same polynomial to approximate $\sqrt{6}$, would you expect your answer to be more of less accurate than it is for $\sqrt{5}$? Briefly indicate why.

2. Starting from the Taylor series at $a = 0$ for $f(x) = \sin x$, find a series for

$$\int \sin(x^2)\, dx.$$