Math 252, Fall 2020   Name: _____
Quiz 9   Due: Midnight, Nov. 2

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. Using a comparison test (limit comparison or otherwise), determine if the following converge or diverge. Show enough work to justify your conclusion.

   (a) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^3 + 2n}$

   (b) $\displaystyle\sum_{j=1}^{\infty} \frac{4^{j+1}}{3^j - 2}$

2. Determine whether the following diverge, converge conditionally, or converge absolutely. Show enough work to justify your conclusion.

   (a) $\displaystyle\sum_{i=1}^{\infty} \frac{n^2 - 1}{5n^2 + n}$

   (b) $1 - \dfrac{1}{\sqrt{2}} + \dfrac{1}{\sqrt{3}} - \dfrac{1}{\sqrt{4}} + \dfrac{1}{\sqrt{5}} - \cdots$