

To receive full credit you must show work.

1. [5 points] Using a comparison test, determine if the following integral converges or diverges. Be sure to state your comparison and fully justify the use of the comparison test.

$$\int_1^{\infty} \frac{|\cos(x)|}{x^2 + 3} dx$$

2. [5 points] Find the volume of the solid defined by rotating the area bounded by $\frac{1}{x}$, the x -axis, and to the right of the line $x = 1$, rotated about the x -axis. (This solid is called Gabriel's Horn).
[Hint: You will want to evaluate an improper integral]

Total: /10