

5. [7 points] Determine whether the following improper integral converges or diverges and circle the corresponding word. **Fully justify** your answer including using **proper notation** and showing mechanics of any tests you use. You do not need to calculate the value of the integral if it converges.

$$\int_2^{\infty} \frac{x+1}{5x^3 + 3x^3 \sin x} dx$$

Circle one:

Converges

Diverges

Justification: