

4. [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.

$$\int_1^{\infty} \frac{12 + 5 \sin(x)}{x^{1/4} + x^{5/4}} dx$$

Circle one:

**Converges**

**Diverges**

Justification: