8. [8 points] Determine whether the following improper integral converges or diverges. **Circle your final answer choice**. Fully justify your answer including using proper notation and showing mechanics of any tests you use.

$$\int_1^\infty \frac{t^2 + \ln(t)}{t^3 - \cos(t) + 2}dt$$

Circle one: **Converges**   **Diverges**