1. [10 points] Indicate if each of the following statements are true or false by circling the correct answer. **You do not need to justify your answers.**

   a. [2 points] The integral \( \int_{-2}^{2} \frac{1}{x^2} \, dx = -1 \)

      True  False

   b. [2 points] For any positive number \( p \), the integral \( \int_{0}^{\infty} \frac{1}{x^p} \, dx \) diverges.

      True  False

   c. [2 points] If the median grade of an exam is larger than the average grade then more than half of the students got a grade greater or equal to the average.

      True  False

   d. [2 points] Let \( f(x) \) be a positive and continuous function. If \( \lim_{x \to \infty} f(x) = \infty \), then \( \int_{0}^{\infty} \frac{1}{f(x)} \, dx \) converges.

      True  False

   e. [2 points] The line \( y = 2x + 1 \) has parametric equations \( x = -1 + 2t, \ y = -1 + 4t \).

      True  False