

Improper Integrals Assignment

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Location [10 - Improper Integrals Assignment/Improper Integrals Assignment.sagews](#)

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Improper Integrals Assignment

Question 0

Watch the lecture video [here](#).

Did you watch the video? [Type yes or no.]

For each integral below:

- Graph the integrand (the function inside the integral).
- State why the integral is improper (there may be more than one reason).
- Set up an appropriate limit to compute the value of the integral, and calculate the limit.
- Evaluate the integral directly, and compare the answer with the limit.

Question 1

$$\int_0^{\infty} \frac{1}{x^2 + 2x + 4} dx \quad [\text{Answer: } \frac{\pi\sqrt{3}}{9}]$$

Question 2

$$\int_0^1 \frac{1}{\sqrt{x}} dx \quad [\text{Answer: } 2]$$

Question 3

$$\int_0^{10} \frac{1}{(x-5)^2} dx \quad [\text{Answer: Divergent}]$$

Question 4

$$\int_0^{\infty} \frac{1}{e^x \sqrt{x}} dx \quad [\text{Answer: } \sqrt{\pi}]$$