

Quiz Three

Lecture: 8:30 **SI:** Alex Ashley
 9:30 Avni Becca
 Jason Matt

No notes. Calculators are allowed.

Write clearly and explain your reasoning.

1 (8 points) Find the value, if any, of each of the following improper integrals. You must use limits to justify your answers!

(a) (2 points) $\int_0^{\infty} e^{-5x} dx$

(b) (3 points) $\int_0^1 \frac{1}{\sqrt{x}} dx$

(c) (3 points) $\int_1^{\infty} \frac{1}{\sqrt{x}} dx$

2 (4 points) Find the area, if it exists, under the curve $y = \frac{1}{x^2}$ to the right of $x = 2$.

3 (8 points) Suppose that 5% of the items produced by a factory are defective. If 12 items are chosen at random, what is the probability that...

(For this problem you need not simplify. That is, your final answer may involve expressions such as $\binom{5}{3}$ and $(0.4)^3$. Your final answer should **not** include the expression $b(n, k; p)$.)

(a) (2 points) ... exactly 1 is defective?

(b) (3 points) ... at least 1 is defective?

(c) (3 points) ... 2 or fewer are defective?