Stat 134: Section 12

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Problem 1

Suppose X has density $f(x) = c/x^4$ for $x > 1$, $f(x) = 0$ otherwise, where c is a constant. Find

a. c;

b. $E(X)$;

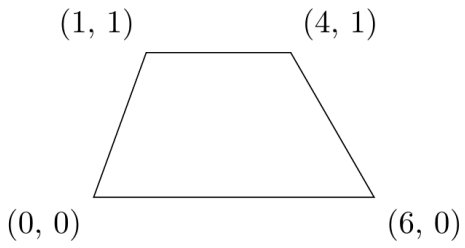
c. $Var(X)$.

Ex 4.1.2 in Pitman's Probability

Recall that a probability density function has to be integrated to 1.

Problem 2

Suppose a point is picked uniformly at random from the trapezoid shown below, with the indicated vertex coordinates (x, y). Find the probability density function for the x-coordinate of the randomly selected point.



Problem 3

Suppose that X is a random variable whose density is

$$f(x) = \frac{1}{2(1+|x|)^2}, (-\infty < x < \infty)$$

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a. Draw the graph of $f(x)$.

b. Find $P(-1 < X < 2)$.

c. Find $P(|X| > 1)$.

d. Is $E(X)$ defined?

Ex 4.1.5 in Pitman's Probability