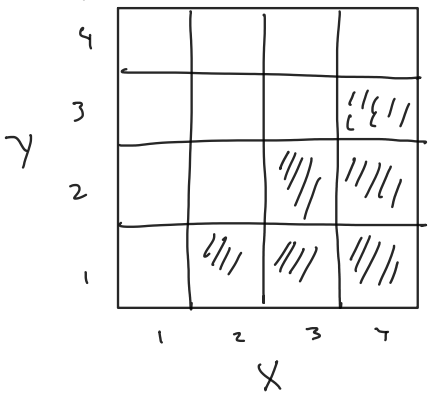
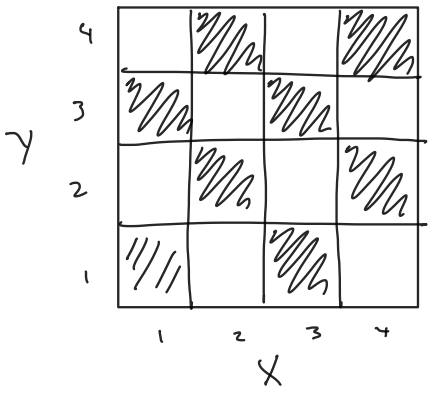
Probability 2

Sunday, March 22, 2020 5:46 AM

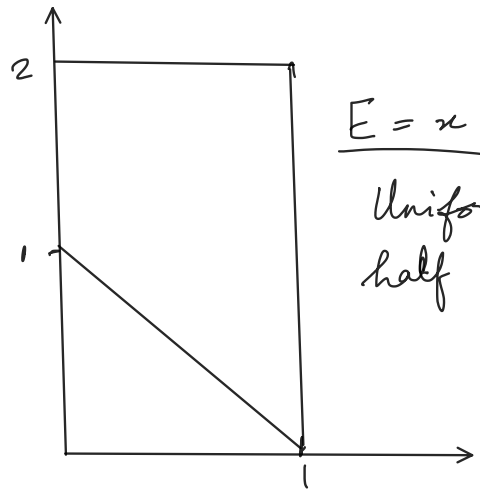
Rolling a tetrahedral die:



$$P(X > Y) = \frac{6}{16} = \frac{3}{8}$$



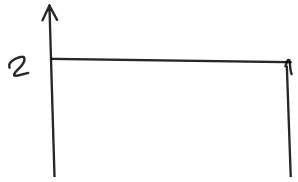
$$P(x+y \text{ is even}) = \frac{8}{16} = \frac{1}{2}$$



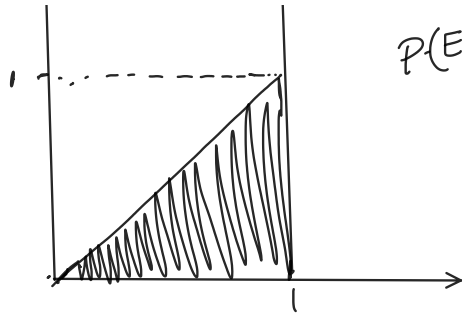
E = x & y have the same values.

Uniform probability law: probability is half the area of the event.

$P(E) = 0$ (since area of a line $x = y$ is 0)

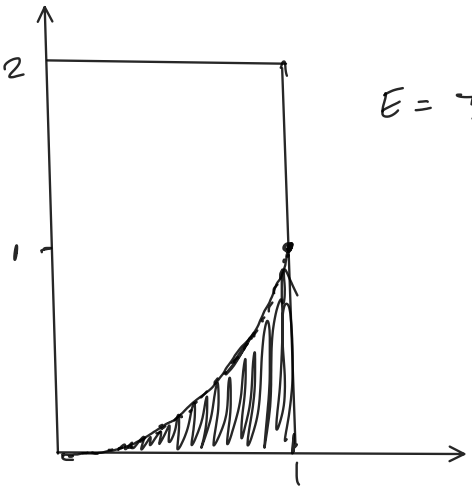


E = the value x of first component is larger or equal to y.



$P(E) = P(X \geq y)$ ← shaded area.

$P(E) = \frac{1}{2} \cdot 1 \cdot 1 \cdot \frac{1}{2} = \frac{1}{4}$



E = The value of x^2 is larger than or equal to the value of y

$x^2 \geq y$ ← shaded area

$$\text{area} = \int_0^1 x^2 dx = \frac{x^3}{3}\Big|_0^1$$

$$= \frac{1}{3}$$