$$\frac{1}{\cos x} = \frac{1}{\sec x}$$

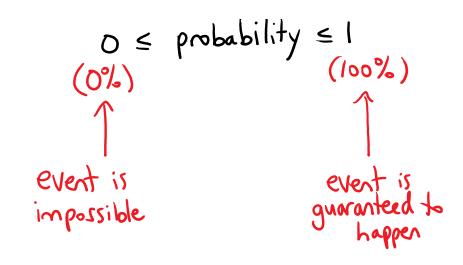
$$\frac{1}{\cos x} = \sec x$$

$$secx = \frac{1}{Gsx} \qquad cscx = \frac{1}{sinx} \qquad Gtx = \frac{1}{tanx}$$

$$tanx = \frac{sinx}{Gsx}$$

Integration Formulas

Section 3 Probability



Sample space of an experiment: set of possible outcomes

Event: subset of the sample space

Notation: S for sample space A,B,C etc. for events

Ex 1. Flip a fair coin three times. What is the probability of getting one or two heads?

Sample space S = {HHH, THH, HTH, HHT, TTH, THT, HTT, TTT}

Event A = { THH, HTH, HHT, TTH, THT, HTT} desired outcomes: I or 2 heads

$$P(A) = n(A) \leftarrow \# \text{ of outsomes in } A$$

$$"probability of A" = \frac{6}{8} \text{ or } \frac{3}{4} \text{ or } 0.75 \text{ or } 75\%$$

Notation: P(A) is the probability of getting an outcome in A.

FACT—
When outcomes are equally likely,
$$P(A) = \frac{n(A)}{n(S)}$$

Ex 2. Randomly select an integer between 1 and 40 (inclusive). Find the probability of getting a multiple of 5 or 7.

$$S = \{1, 2, ..., 39, 40\}$$
 $A = \{5, 10, 15, 20, 25, 30, 35, 40, 7, 14, 21, 28\}$

mult. of 5

Don't count 35 twice!

 $P(A) = \frac{12}{40}$

 $\to 3$. Roll a pair of fair 6-sided dice. Find the probability of getting a sum of at most 5.

| Die#1 | Die #2 | 1 | 2 | 3 | 4 | 5 | 6 |
|-------|------------------------|-------------------|------|-------------|------------|-----|---|
| l | | * | * | * | ≉ | | |
| 2 | | (\Rightarrow) | * | * | | | |
| 3 | | A | * | | | | |
| 4 | | * | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| Note: | n(s) = One was Two was | y to | roll | do | uble an | l's | 2 |
| | A: Sun | \ ≤ 5 | | (♣) | | | |
| | h(A) = 10 | | | | | | |
| | P(A) = | 10 36 | | | | | |

Ex 4. Four study groups have the following numbers of students: 4, 6, 7, 9. Pick two of the groups at random. Find the probability that they have at least 15 students in total.

$$S = \{ \{4,6\}, \{4,7\}, \{4,9\}, \{6,7\}, \{6,9\}, \{3,9\} \} \}$$

 $\{6,4\} = \{4,6\}$ $n(s) = 6$

$$\xi 6,43 = \xi 4,63 \qquad n(s)=6$$

$$A = \begin{cases} \xi 6,93 & \xi 7,93 \\ \text{sum to } > 15 \end{cases}$$