# Continuous Uniform distribution

## Application

Busses arrive at a specific stop at 15-minute intervals starting at 7 a.m. If a passenger arrives at the at the stop at a time that is uniformly distributed between 7 a.m and 7.30 a.m., what is the probability that he waits

   (a) <u>less than 5 minutes</u> for a bus
   (b) <u>more than 10 minutes</u> for a bus

(a) $P(10 < X < 15) + P(25 < X < 30)$

$$= \int_{10}^{15} \frac{1}{30} \, dx + \int_{25}^{30} \frac{1}{30} \, dx = \frac{1}{6} + \frac{1}{6} = \underline{\frac{1}{3}}$$

(b) $P(0 < X < 5) + P(15 < X < 20)$

$$= \int_{0}^{5} \frac{1}{30} \, dx + \int_{15}^{20} \frac{1}{30} \, dx = \underline{\frac{1}{3}}$$

Reference : A first course in Probability; Sheldon Ross; 2010.