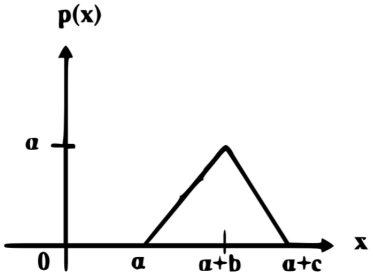
# Assignment-2-Probability And Random Variables

Name: Aravinda Kumar Reddy Thippareddy
Roll.No.: CS20BTECH11053

March 21, 2021

**Problem Statement:** Probability density function $p(x)$ of random variable x is as shown below. The value of $\alpha$ is




**Solution:** We know that,

$$\int_{-\infty}^{+\infty} P(x).dx = 1$$

$$\int_{-\infty}^{+\infty} P(x)\times dx = \int_{-\infty}^{\alpha} 0 \times dx + \int_{\alpha}^{\alpha+c} P(x)\times dx \tag{1}$$

$$+ \int_{\alpha+c}^{+\infty} 0 \times dx \tag{2}$$

$$1 = 0 + \int_{\alpha}^{\alpha+c} P(x) \times dx + 0 \tag{3}$$

$$1 = \frac{1}{2} \times (\alpha + c - \alpha) \times \alpha \tag{4}$$

$$\frac{2}{c} = \alpha \tag{5}$$

$$\alpha = \frac{2}{c} \tag{6}$$

Therefore, the value of $\alpha = \frac{2}{c}$.