



1 DEFINITIONS

- 1) The CDF of X is defined as,

$$F_X(x) = \Pr(X \leq x) \quad (1.1)$$

- 2) The PDF of X is defined as,

$$p_X(x) = \frac{d}{dx} F_X(x) \quad (1.2)$$

- 3) Let $X \sim \mathcal{N}(\mu, \sigma^2)$. Then the Q function is defined as,

$$Q(x) = \Pr(X > x), \quad x \geq 0 \quad (1.3)$$

2 PROBLEMS

1. Find

$$\Pr(|X - \mu| \leq k\sigma) \quad (2.0.1.1)$$

in terms of Q function.

2. Find

$$\Pr(X \leq x, |X - \mu| \leq k\sigma) \quad (2.0.2.1)$$

in terms of $F_X(x)$

3. Find

$$F_X(x | |X - \mu| \leq k\sigma) \quad (2.0.3.1)$$

4. Find

$$p_X(x | |X - \mu| \leq k\sigma) \quad (2.0.4.1)$$