

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y - y_1 = m(x - x_1)$$

$$y = mx + b$$

$$C(x) = cx + F$$

$$R(x) = sx$$

$$P(x) = R(x) - C(x)$$

$$\text{If } A = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \text{ and } D = ad - bc \neq 0$$

$$\text{then } A^{-1} = \frac{1}{D} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$I = Prt$$

$$F = P(1 + rt)$$

$$i = \frac{r}{m}$$

$$n = mt$$

$$F = P(1 + i)^n$$

$$P = F(1 + i)^{-n}$$

$$F = E \left[ \frac{(1 + i)^n - 1}{i} \right]$$

$$P = E \left[ \frac{1 - (1 + i)^{-n}}{i} \right]$$

$$E = \frac{Fi}{(1 + i)^n - 1}$$

$$E = \frac{Pi}{1 - (1 + i)^{-n}}$$

$$(A \cup B)^c = A^c \cap B^c$$

$$(A \cap B)^c = A^c \cup B^c$$

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$n! = n \cdot (n-1) \cdot (n-2) \cdot \dots \cdot 3 \cdot 2 \cdot 1$$

$$0! = 1$$

$$P(n, r) = \frac{n!}{(n-r)!}$$

$$C(n, r) = \frac{n!}{r!(n-r)!}$$

$$P(E \cup F) = P(E) + P(F) - P(E \cap F)$$

$$P(E^c) = 1 - P(E)$$

$$P(E) = \frac{n(E)}{n(S)}$$

$$P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$P(A \cap B) = P(A) \cdot P(B|A)$$

$P(A \cap B) = P(A) \cdot P(B)$  for  $A$  and  $B$  independent.

$$P(A_i | E) = \frac{P(A_i) \cdot P(E | A_i)}{P(A_1) \cdot P(E | A_1) + \dots + P(A_n) \cdot P(E | A_n)}$$

where  $1 \leq i \leq n$ .

$$E(X) = x_1 p_1 + x_2 p_2 + \dots + x_n p_n$$

$$\text{Var}(X) = p_1(x_1 - \mu)^2 + p_2(x_2 - \mu)^2 + \dots + p_n(x_n - \mu)^2$$

$$\sigma = \sqrt{\text{Var}(X)}$$

$$\frac{P(E)}{P(E^c)}$$

$$\frac{P(E^c)}{P(E)}$$

$$P(E) = \frac{a}{a+b}$$

$$P(\mu - k\sigma \leq X \leq \mu + k\sigma) \geq 1 - \frac{1}{k^2}$$

$$P(X = x) = C(n, x) p^x q^{n-x}$$

$$p + q = 1$$

$$\mu = np$$

$$\text{Var}(x) = npq$$

$$\sigma = \sqrt{npq}$$

$$P(Z < z) = \frac{1}{2} [1 + P(-z < Z < z)]$$

$$P(X > a) = P\left(Z > \frac{a - \mu}{\sigma}\right)$$

$$P(X < b) = P\left(Z < \frac{b - \mu}{\sigma}\right)$$

$$P(a < X < b) = P\left(\frac{a - \mu}{\sigma} < Z < \frac{b - \mu}{\sigma}\right)$$