

$$2) \quad F_{X_1}(x) = F_{X_2}(x) = F_X(x) = \frac{1 - \cos x}{2} \quad 0 \leq x \leq \pi$$

$$f_X(x) = \frac{dF_X}{dx} = \frac{\sin x}{2} \quad Y = \max(X_1, X_2)$$

$$f_Y(y) = 2 F_X(y) \cdot f_X(y) \quad \leftarrow \quad Y = \max_{i=1}^n (X_i)$$

$$f_Y(y) = n F_X^{n-1}(y) f_X(y)$$

$$f_Y(y) = 2 \frac{1 - \cos y}{2} \cdot \frac{\sin y}{2}$$

$$f_Y(y) = \frac{(1 - \cos y) \sin y}{2} \quad 0 \leq y \leq \pi$$

