3. (c) $x = \lambda_1 x_1 + \lambda_2 x_2 = (\lambda_1+\lambda_2) x_0$

$$\therefore x_0 = \frac{\lambda_1}{\lambda_1+\lambda_2} x_1 + \frac{\lambda_2}{\lambda_1+\lambda_2} x_2$$

$$\therefore x_0 = \alpha x_1 + (1-\alpha) x_2 \in C$$

(e). ~~$bC+b$~~ $C+b$

$x = x_0 + b \in C+b, \quad y = y_0 + b \in C+b$

$\lambda x + (1-\lambda) y = \lambda x_0 + (1-\lambda) y_0 + b \in C+b$

(e, 2) $C \to C+b$

$D-b \leftarrow D$

(d). ① $x, y \in \bar{C}, \quad x_k \to x, \; y_k \to y.$

$\alpha x + (1-\alpha) y \leftarrow \alpha x_k + (1-\alpha) y_k \in C$

$\therefore \alpha x + (1-\alpha) y \in \bar{C}$

② $x, y \in \mathring{C}, \quad O_x^r \subset C, \; O_y^r \subset C.$

$e = \alpha x + (1-\alpha) y, \quad O_e^r,$

$\forall p = e + z, \; \|z\| < r, \; p \in O_e$

$\therefore p = \alpha(x+z) + (1-\alpha)(y+z) \in C, \quad \therefore O_e \subset C, \; \therefore e \in \mathring{C}$