$$\begin{bmatrix} p_x \sin\theta - p_y \cos\theta \\ p_x \cos\theta + p_y \sin\theta \end{bmatrix}$$

$$\begin{bmatrix} p_x \sin\theta \\ p_x \cos\theta \end{bmatrix}$$

$$\begin{bmatrix} -p_y \cos\theta \\ p_y \sin\theta \end{bmatrix}$$

(e)