(a)

$$\frac{2+3i}{i-5} = \frac{(2+3i)(-5-i)}{26} \tag{1}$$

$$= \frac{-7-17i}{26} \tag{2}$$

$$= -\frac{-7}{26} - \frac{17}{26}i \tag{3}$$

(b)

$$z^2 + i = 0 \tag{4}$$

$$\Leftrightarrow z = \begin{bmatrix} \sqrt{-i} \\ -\sqrt{-i} \end{bmatrix} \tag{5}$$

$$\Leftrightarrow z = \begin{bmatrix} (\cos(-\frac{\pi}{2}) + i\sin(-\frac{\pi}{2}))^{\frac{1}{2}} \\ -(\cos(-\frac{\pi}{2}) + i\sin(-\frac{\pi}{2}))^{\frac{1}{2}} \end{bmatrix} \tag{6}$$

$$\Leftrightarrow z = \begin{bmatrix} \cos(\frac{3\pi}{4}) + i\sin(\frac{3\pi}{4}) \\ \cos(-\frac{\pi}{4}) + i\sin(-\frac{\pi}{4}) \\ -\cos(-\frac{\pi}{4}) - i\sin(-\frac{\pi}{4}) \\ -\cos(\frac{3\pi}{4}) - i\sin(\frac{3\pi}{4}) \end{bmatrix} \tag{7}$$

$$\Leftrightarrow z = \begin{bmatrix} \cos(\frac{3\pi}{4}) + i\sin(\frac{3\pi}{4}) \\ \cos(-\frac{\pi}{4}) + i\sin(-\frac{\pi}{4}) \end{bmatrix} \tag{8}$$

$$\Leftrightarrow z = \begin{bmatrix} (\frac{-\sqrt{2}}{2}) + i(\frac{\sqrt{2}}{2}) \\ (\frac{\sqrt{2}}{2}) + i(\frac{-\sqrt{2}}{2}) \end{bmatrix} \tag{9}$$