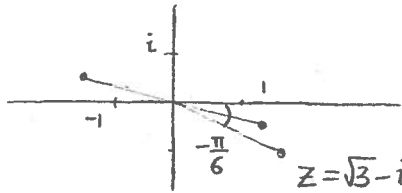


$$(a) \quad -\left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4}\right) \quad a = -\frac{\sqrt{2}}{2} \quad b = -\frac{\sqrt{2}}{2}$$

$$(b) \quad 3 \left[\cos\left(-\frac{\pi}{2}\right) + i \sin\left(-\frac{\pi}{2}\right) \right] \quad a = 0 \quad b = -3$$

(c)



$$|z| = \sqrt{3+1} = 2 \quad \tan \phi = -\frac{1}{\sqrt{3}} \quad \phi = -\frac{\pi}{6} + 2k\pi$$

$$z = 2 e^{i\left(-\frac{\pi}{6} + 2k\pi\right)}$$

$$z^{1/2} = \sqrt{2} \exp\left[i\left(-\frac{\pi}{12} + k\pi\right)\right] = \pm \sqrt{2} \left(\cos \frac{\pi}{12} - i \sin \frac{\pi}{12}\right)$$

$$\text{or } \begin{aligned} a &= \sqrt{2} \cos \frac{\pi}{12}, & b &= -\sqrt{2} \sin \frac{\pi}{12} \\ a &= -\sqrt{2} \cos \frac{\pi}{12}, & b &= \sqrt{2} \sin \frac{\pi}{12} \end{aligned}$$

$$(d) \quad \frac{(1+i)(2-3i)}{(2+3i)(2-3i)} + \cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4} = \frac{2-i+3}{2^2+3^2} - \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} i$$

$$a = \frac{5}{13} - \frac{\sqrt{2}}{2}, \quad b = -\frac{1}{13} + \frac{\sqrt{2}}{2}$$

$$(e) \quad 5(\cos 2 + i \sin 2) \quad a = 5 \cos 2 \quad b = 5 \sin 2.$$

$$(f) \quad |e^{i\pi/3}| = 1 \quad a = 1 \quad b = 0$$

$$(g) \quad \frac{2}{i^4} = 2 \quad a = 2 \quad b = 0$$