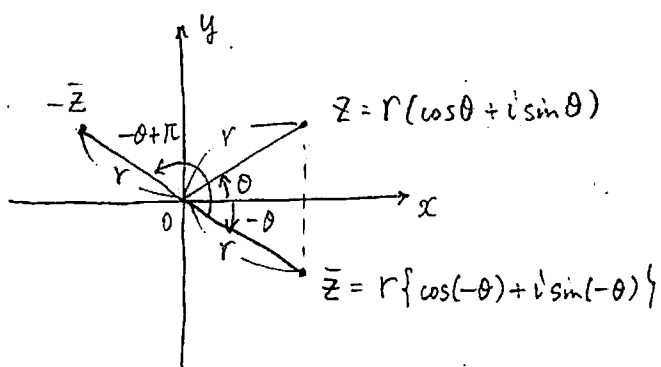
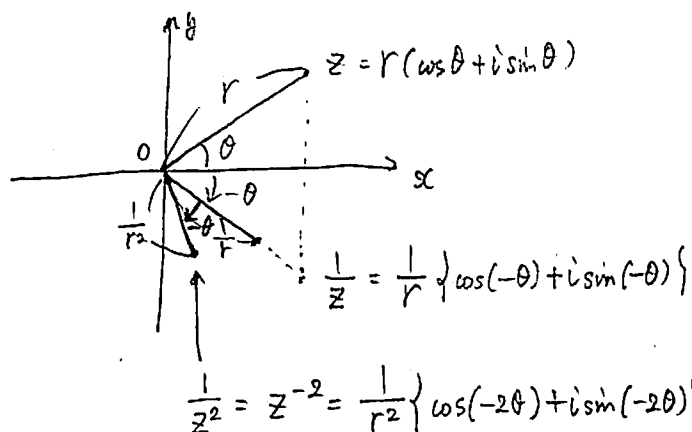




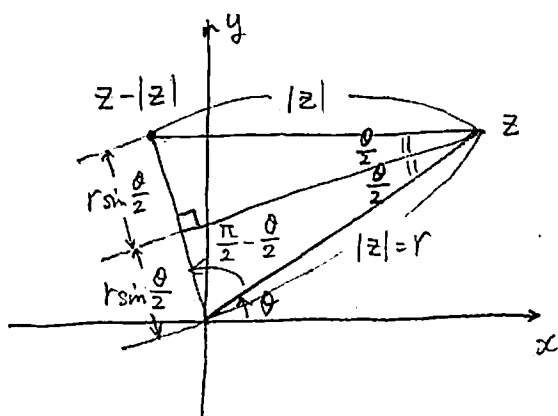
$$(1) \quad -\bar{z} = r\{\cos(\pi - \theta) + i \sin(\pi - \theta)\}$$

(右図より)



$$(2) \quad \frac{1}{z^2} = z^{-2} = \frac{1}{r^2}\{\cos(-2\theta) + i \sin(-2\theta)\}$$

(右図より)



(3) 図より

$$z - |z| = (2r \sin \frac{\theta}{2})\{\cos(\frac{\pi}{2} + \frac{\theta}{2}) + i \sin(\frac{\pi}{2} + \frac{\theta}{2})\}$$

(3) の計算の解答

$$\begin{aligned} z - |z| &= r(\cos \theta + i \sin \theta) - r \\ &= r(\cos \theta - 1) + i \times r \sin \theta \\ &= -2r \sin^2 \frac{\theta}{2} + i \times 2r \sin \frac{\theta}{2} \cos \frac{\theta}{2} \\ &= (2r \sin \frac{\theta}{2}) \left(-\sin \frac{\theta}{2} + i \cos \frac{\theta}{2} \right) \\ &= (2r \sin \frac{\theta}{2}) \left\{ \sin \left(-\frac{\theta}{2} \right) + i \cos \left(-\frac{\theta}{2} \right) \right\} \\ &= (2r \sin \frac{\theta}{2}) \left\{ \cos \left(\frac{\pi}{2} + \frac{\theta}{2} \right) + i \sin \left(\frac{\pi}{2} + \frac{\theta}{2} \right) \right\} \end{aligned}$$

$$\begin{cases} \sin^2 \frac{\theta}{2} = \frac{1 - \cos \theta}{2} \text{ 及び } \\ \cos \theta - 1 = -2 \sin^2 \frac{\theta}{2} \end{cases}$$

$$\begin{cases} -\sin x = \sin(-x) \\ \cos x = \cos(-x) \end{cases}$$

$$\begin{cases} \sin x = \cos \left(\frac{\pi}{2} - x \right) \\ \cos x = \sin \left(\frac{\pi}{2} - x \right) \end{cases}$$