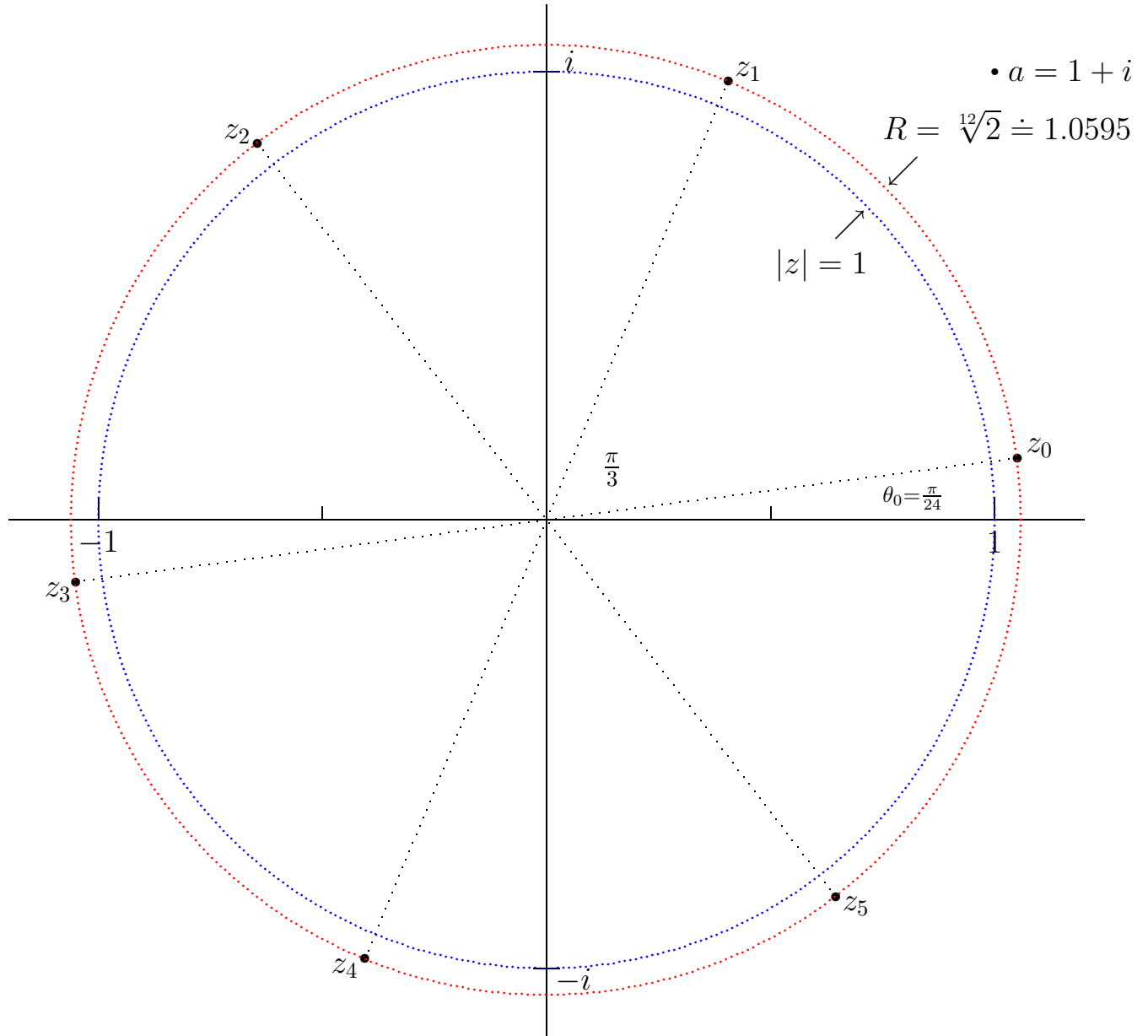


# The Sixth Roots of $a = 1 + i$



$$\begin{aligned}
 z_0 &= \sqrt[12]{2}(\cos(\frac{\pi}{24}) + i \sin(\frac{\pi}{24})) = \frac{\sqrt[12]{2}}{4}(\sqrt{8+2\sigma} + i\sqrt{8-2\sigma}) \doteq 1.0504 + .13829i \\
 z_1 &= \sqrt[12]{2}(\cos(\frac{3\pi}{8}) + i \sin(\frac{3\pi}{8})) = \frac{\sqrt[12]{2}}{2}(\sqrt{2-\sqrt{2}} + i\sqrt{2+\sqrt{2}}) \doteq .40544 + .97882i \\
 z_2 &= \sqrt[12]{2}(\cos(\frac{17\pi}{24}) + i \sin(\frac{17\pi}{24})) = -\frac{\sqrt[12]{2}}{4}(\sqrt{8-2\tau} - i\sqrt{8+2\tau}) \doteq -.64496 + .84053i \\
 z_3 &= \sqrt[12]{2}(\cos(\frac{25\pi}{24}) + i \sin(\frac{25\pi}{24})) = -\frac{\sqrt[12]{2}}{4}(\sqrt{8+2\sigma} + i\sqrt{8-2\sigma}) \doteq -1.0504 - .13829i \\
 z_4 &= \sqrt[12]{2}(\cos(\frac{11\pi}{8}) + i \sin(\frac{11\pi}{8})) = -\frac{\sqrt[12]{2}}{2}(\sqrt{2-\sqrt{2}} + i\sqrt{2+\sqrt{2}}) \doteq -.40544 - .97882i \\
 z_5 &= \sqrt[12]{2}(\cos(\frac{41\pi}{24}) + i \sin(\frac{41\pi}{24})) = \frac{\sqrt[12]{2}}{4}(\sqrt{8-2\tau} - i\sqrt{8+2\tau}) \doteq .64496 - .84053i
 \end{aligned}$$