2. $z^4 + 4z^2 + 16 = 0$

$u = z^2 \Rightarrow u^2 + 4u + 16 = 0$

$u_{1,2} = \frac{-4 \pm \sqrt{(-4)^2 - (4 \cdot 1 \cdot 16)}}{2 \cdot 1} = \frac{-4 \pm \sqrt{-48}}{2} \Rightarrow \frac{-4 \pm \sqrt{48}\,i}{2}$

$u_1 = \frac{-4 + \sqrt{48}\,i}{2} = \underbrace{-2}_{a} + \underbrace{\frac{\sqrt{48}}{2}}_{b} i = \sqrt{(-2)^2 + \left(\frac{\sqrt{48}}{2}\right)^2} \cdot \left(\cos\left(\tan^{-1}\left(\frac{\frac{\sqrt{48}}{2}}{-2}\right) + \pi\right) + \sin\left(\tan^{-1}\left(\frac{\frac{\sqrt{48}}{2}}{-2}\right) + \pi\right)\right)$

$= 4 \cdot (\cos(2.094) + i\sin(2.094))$

$u_2 = \frac{-4 - \sqrt{48}\,i}{2} = -2 - \frac{\sqrt{48}}{2} \cdot i = 4 \cdot (\cos(5.236) + i\sin(5.236))$

$u = z^2$

$z = \sqrt{u}$

$z_1 = \sqrt{u_1} = \sqrt{-2 + \frac{\sqrt{48}}{2} i} \Rightarrow p + iq$

$p = \frac{1}{\sqrt{2}} \sqrt{\sqrt{(-2)^2 + \left(\frac{\sqrt{48}}{2}\right)^2} - 2} = 1$

$q = \frac{1}{\sqrt{2}} \sqrt{\sqrt{(-2)^2 + \left(\frac{\sqrt{48}}{2}\right)^2} - -2} = 1.732$

$\Rightarrow z_1 = 1 + 1.732i$

$z_2 = \sqrt{u_2} = \sqrt{-2 - \frac{\sqrt{48}}{2}} \Rightarrow p + iq$

$p = \frac{1}{\sqrt{2}} \sqrt{\sqrt{(-2)^2 + \left(-\frac{\sqrt{48}}{2}\right)^2} - 2} = 1$

$q = \frac{-\sqrt{\sqrt{(-2)^2 + \left(-\frac{\sqrt{48}}{2}\right)^2} - -2}}{\sqrt{2}} = -1.732$

$\Rightarrow z_2 = 1 - 1.732i$