

$$\begin{aligned} \text{(b) } \triangleright \phi_2^2 &= \left(\frac{1-\sqrt{5}}{2} \right)^2 = \frac{(1-\sqrt{5})^2}{4} = \frac{1-2\sqrt{5}+5}{4} \\ &= \frac{6-2\sqrt{5}}{4} = \frac{2(3-\sqrt{5})}{2 \times 2} = \frac{3-\sqrt{5}}{2} \\ \triangleright \phi_2 + 1 &= \frac{1-\sqrt{5}}{2} + 1 = \frac{1-\sqrt{5}}{2} + \frac{2}{2} = \frac{3-\sqrt{5}}{2} \end{aligned}$$