4.26 b)

$$q = \frac{2i}{1+i} = \frac{2\,\mathrm{cis}\,90}{\sqrt{2}\,\mathrm{cis}\,45} = \sqrt{2}\,\mathrm{cis}\,45$$

$$S_{12} = \frac{\sqrt{2}\,\mathrm{cis}\,45\left((\sqrt{2}\,\mathrm{cis}\,45)^{12}-1\right)}{\sqrt{2}\,\mathrm{cis}\,45-1} = \frac{\sqrt{2}\,\mathrm{cis}\,45\left(2^6\,\mathrm{cis}\,180-1\right)}{1+i-1} =$$

$$\frac{\sqrt{2}\,\mathrm{cis}\,45(-64-1)}{i} = \frac{-65(1+i)}{i} = \frac{-65i(1+i)}{i(-i)} = -65+65i$$