

$$\boxed{81} \quad \text{(a)} \quad F = \frac{1}{2}(1 - \cos \theta) \Rightarrow \frac{1}{4} = \frac{1}{2}(1 - \cos \theta) \Rightarrow \frac{1}{2} = 1 - \cos \theta \Rightarrow \cos \theta = \frac{1}{2} \Rightarrow \theta = \cos^{-1} \frac{1}{2} = 60^\circ$$

$$\text{(b)} \quad F = \frac{1}{2}(1 - \cos \theta) \Rightarrow \frac{3}{4} = \frac{1}{2}(1 - \cos \theta) \Rightarrow \frac{3}{2} = 1 - \cos \theta \Rightarrow \cos \theta = -\frac{1}{2} \Rightarrow \theta = \cos^{-1} \left(-\frac{1}{2} \right) = 120^\circ$$