Problem 2: Prove that $\sin(360^\circ - \theta) = -\sin\theta$ for all angles θ. (Source: AoPS Precalculus Ex. 3.1.2)

Proof:

$$\begin{aligned}\sin(360^\circ - \theta) &= \sin(-\theta + 360^\circ) \\ &= \sin(-\theta) \\ &= \boxed{-\sin(\theta)}\end{aligned}$$