Problem 19: Use the fact that $e^{-i\theta} = \dfrac{1}{e^{i\theta}}$ to reproduce the identities for $\sin(-\theta)$ and $\cos(-\theta)$.

(Source: AoPS Precalculus)

We have

$$\cos(-\theta) + i\sin(-\theta) = \frac{1}{\cos\theta + i\sin\theta} = \cos\theta - i\sin\theta$$

Equating the real and imaginary parts, we get

$$\boxed{\cos(-\theta) = \cos\theta} \text{ and } \boxed{\sin(-\theta) = -\sin\theta}.$$