

$$\begin{aligned}
 1.a \quad \cos(-\theta) &= \cos(0-\theta) \\
 &= \cos(0)\cos\theta + \sin(0)\sin\theta \\
 &= (1)\cos\theta + (0)\sin\theta \\
 &= \cos\theta
 \end{aligned}$$

$$\begin{aligned}
 b. \quad \sin\left(\frac{\pi}{2}-\theta\right) &= \sin\left(\frac{\pi}{2}\right)\cos\theta - \cos\left(\frac{\pi}{2}\right)\sin\theta \\
 &= (1)\cos\theta - (0)\sin\theta \\
 &= \cos\theta
 \end{aligned}$$

$$\begin{aligned}
 c. \quad \cos\left(\frac{\pi}{2}-\theta\right) &= \cos\left(\frac{\pi}{2}\right)\cos\theta + \sin\left(\frac{\pi}{2}\right)\sin\theta \\
 &= (0)\cos\theta + (1)\sin\theta \\
 &= \sin\theta
 \end{aligned}$$

$$\begin{aligned}
 d. \quad \tan(\pi+\theta) &= \frac{\tan\pi + \tan\theta}{1 - \tan\pi \tan\theta} \\
 &= \frac{0 + \tan\theta}{1 - (0)\tan\theta} = \tan\theta
 \end{aligned}$$

$$\begin{aligned}
 e. \quad \sin(\theta+\theta) &= \sin\theta \cos\theta + \cos\theta \sin\theta \\
 &= 2\sin\theta \cos\theta
 \end{aligned}$$

$$\begin{aligned}
 f. \quad \cos(\theta+\theta) &= \cos\theta \cos\theta - \sin\theta \sin\theta \\
 &= \cos^2\theta - \sin^2\theta
 \end{aligned}$$

$$\begin{aligned}
 g. \quad \tan(\theta+\theta) &= \frac{\tan\theta + \tan\theta}{1 - \tan\theta \tan\theta} \\
 &= \frac{2\tan\theta}{1 - \tan^2\theta}
 \end{aligned}$$

$$\begin{aligned}
 h. \quad \sin(\theta+\pi) &= \sin\theta \cos\pi + \cos\theta \sin\pi \\
 &= (\sin\theta)(-1) + (\cos\theta)(0) \\
 &= -\sin\theta
 \end{aligned}$$

$$\begin{aligned}
 i. \quad \cos(\theta-\pi) &= \cos\theta \cos\pi + \sin\theta \sin\pi \\
 &= (\cos\theta)(-1) + (\sin\theta)(0) \\
 &= -\cos\theta
 \end{aligned}$$

$$\begin{aligned}
 j. \quad \sin\left(\frac{\pi}{4}+\theta\right) + \cos\left(\frac{\pi}{4}+\theta\right) &= \left[\sin\left(\frac{\pi}{4}\right)\cos\theta + \cos\left(\frac{\pi}{4}\right)\sin\theta \right] + \left[\cos\left(\frac{\pi}{4}\right)\cos\theta - \sin\left(\frac{\pi}{4}\right)\sin\theta \right] \\
 &= \left[\frac{\sqrt{2}}{2}\cos\theta + \frac{\sqrt{2}}{2}\sin\theta \right] + \left[\frac{\sqrt{2}}{2}\cos\theta - \frac{\sqrt{2}}{2}\sin\theta \right] \\
 &= \frac{\sqrt{2}}{2}\cos\theta + \frac{\sqrt{2}}{2}\cos\theta \\
 &= \sqrt{2}\cos\theta
 \end{aligned}$$