

Name: Solutions

**Mathematics 1613: Trigonometry Quiz #12**

**37:** Use the cosine subtraction formula  $\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$  to evaluate the following:

$$\cos \frac{7\pi}{12} = \frac{\sqrt{2} - \sqrt{6}}{4}$$

$$\cos \frac{\pi}{12} = \frac{\sqrt{2} + \sqrt{6}}{4}$$

**38:** Use the cosine subtraction formula to find an expression for the following:

$$\begin{aligned}\cos(\alpha + \beta) &= \cos(\alpha - (-\beta)) = \cos \alpha \cos(-\beta) + \sin \alpha \sin(-\beta) \\ &= \cos \alpha \cos \beta - \sin \alpha \sin \beta\end{aligned}$$

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