**6.2, # 38:** Find the exact value of $\sin\left(\cos^{-1}\frac{12}{13}+\tan^{-1}\frac{4}{3}\right)$.

**6.2, # 45:** Verify for all $x$ that $\sin\left(\frac{3\pi}{2}+x\right)=-\cos x$.

**6.3 #11:** Find $\cos 2\theta$, $\sin 2\theta$, and $\tan 2\theta$ if $\tan\theta=-\frac{5}{2}$ and $\theta$ is in Quadrant II.

**6.3 #23,25,32:** Verify the following identities.
(a). $\cos^4 x-\sin^4 x=\cos(2x)$

(b). $\frac{\cos 3x}{\sin 2x}=\frac{1}{2}\csc x-2\sin x$

(c). $\frac{\sin 2x}{\sin x}-\frac{\cos 2x}{\cos x}=\sec x$.

**6.3 #15:** Find the exact value (NO DECIMALS!) of $\frac{2\tan 67.5^\circ}{1-\tan^2(67.5^\circ)}$.

**6.3 #36:** Write $\tan^4 x$ in terms of first powers of cosine.

**6.3, #41:** Use half-angle formulas to find the exact value of $\cos\frac{7\pi}{12}$.

**6.3, #49, modified:** Given $\cos\alpha=-\frac{12}{37}$ and $\pi<\alpha<\frac{3\pi}{2}$, find $\sin\frac{\alpha}{2}$, $\cos\frac{\alpha}{2}$, and $\tan\frac{\alpha}{2}$.

**6.3 #80:** Find the exact value of $\tan\left[\frac{1}{2}\cos^{-1}\left(-\frac{15}{17}\right)\right]$.

**6.3 #82:** For $0<x\leq 1$, write $\sin(2\cos^{-1}x)$ as an algebraic expression (no trig or inverse trig functions).

**6.5, # 6:** Determine whether $\frac{5\pi}{6}$ and $\frac{7\pi}{6}$ are solutions to the $4(\cot x - \sqrt{3}) = \cot x - \sqrt{3}$.

**6.5, # 11,14,17:** Solve the following equations, first only over $[0, 2\pi)$ and then over all real numbers.

(a). $\cot \beta = -\frac{\sqrt{3}}{3}$

(b). $\cot \beta = \frac{\sqrt{3}}{3}$

(c). $3\sqrt{2} + 6\cos x = 0$.

(d). $3\tan x + 1 = -2(2 + \tan x)$

**6.5, # 24,27:** Solve the following equations, first only over $[0, 2\pi)$ and then over all real numbers.

(a). $\sqrt{2}\sin\frac{x}{2} - 1 = 0$.

(b). $\cot\left(x - \frac{\pi}{2}\right) + \sqrt{3} = 0$.

(c). $5 + \sin 3x = 4$.