Day 12 HW
Sunday, February 15, 2015 5:53 PM

- p. 425: 2, 8, 50, 51, 54
- p. 432: 2, 4, 12, 15, 16

(2) $\frac{3-\sqrt{3}}{3+\sqrt{3}}$ (5) $-\frac{\sqrt{3}+1}{1+\sqrt{3}}$

(50) $\sin 3v = 3\cos^2 v \sin v - \sin^3 v$ ✓

$\sin(2v+v)$
$\sin 2v\cos v + \cos 2v \sin v$
$\sin(v+v)\cos v + \cos(v+v)\sin v$
$(\sin v\cos v + \cos v\sin v)\cos v + (\cos v\cos v - \sin v\sin v)\sin v$
$\sin v\cos^2 v + \sin v\cos^2 v + \sin v\cos^2 v - \sin^3 v$
$3\cos^2 v \sin v - \sin^3 v$ ✓

(51) $\cos 3x + \cos x = 2\cos 2x\cos x$ ✓

$\cos(2x+x) + \cos(2x-x)$
$\cos 2x\cos x - \sin 2x \sin x + \cos 2x\cos x + \sin 2x \sin x$
$2\cos 2x\cos x$ ✓

(54) $\tan 5v \tan 3v = \frac{\tan^2 4v - \tan^2 v}{1 - \tan^2 4v \tan^2 v}$ ✓

$\tan(4v+v)\tan(4v-v)$
$\left[\frac{\tan 4v + \tan v}{1 - \tan 4v \tan v}\right]\left[\frac{\tan 4v - \tan v}{1 + \tan 4v \tan v}\right]$ (foil numerator & denominator!)
$\frac{\tan^2 4v - \tan^2 v}{1 - \tan^2 4v \tan^2 v}$ ✓

(2) $\cos 2v = 2\cos^2 v - 1$ ✓

$\cos(v+v)$
$\cos v\cos v - \sin v\sin v$
$\cos^2 v - \sin^2 v$
$\cos^2 v - (1 - \cos^2 v)$
$\cos^2 v - 1 + \cos^2 v$
$2\cos^2 v - 1$ ✓

(4) $\tan 2v = \frac{2\tan v}{1 - \tan^2 v}$ ✓

$\tan(v+v)$
$\frac{\tan v + \tan v}{1 - \tan v \tan v}$
$\frac{2\tan v}{1 - \tan^2 v}$ ✓

(12) $\sin 2\theta + \cos 2\theta$
$\sin(\theta+\theta) + \cos(\theta+\theta)$
$\sin\theta\cos\theta + \sin\theta\cos\theta + \underbrace{\cos^2\theta + \sin^2\theta}_{=1}$
$2\sin\theta\cos\theta$

(15) $\sin 4x = 2\sin 2x\cos 2x$ ✓

$\sin(2x+2x)$
$\sin 2x\cos 2x + \cos 2x \sin 2x$
$2\sin 2x\cos 2x$ ✓

(16) $\cos 6x = 2\cos^2 3x - 1$ ✓

$\cos(3x+3x)$
$\cos 3x\cos 3x - \sin 3x \sin 3x$
$\cos^2 3x - \sin^2 3x$

$\cos^2 3x - (1 - \cos^2 3x)$
$\cos^2 3x - 1 + \cos^2 3x$
$2\cos^2 3x - 1$ ✓