Day 11 HW

Thursday, February 12, 2015 5:32 PM

- p. 425: 1, 3, 4-6, 9-12, 23-25, 47, 48

SKIP #24!

① $\frac{\sqrt{6}-\sqrt{2}}{4}$ ③ $\frac{\sqrt{6}+\sqrt{2}}{4}$ ④ $\frac{\sqrt{6}-\sqrt{2}}{4}$ ⑤ $\frac{\sqrt{2}+\sqrt{6}}{4}$ ⑥ $\frac{\sqrt{2}+\sqrt{6}}{4}$

⑨ $\frac{\sqrt{2}-\sqrt{6}}{4}$ ⑩ $\frac{\sqrt{2}-\sqrt{6}}{4}$ ⑪ $\sin 25°$ ⑫ $\cos 112°$

(23) $\sin\left(x-\frac{\pi}{2}\right) = -\cos x$ ✓

$\sin x\cos\frac{\pi}{2} - \sin\frac{\pi}{2}\cos x$

$\sin x(0) - (1)\cos x$

$-\cos x$ ✓

(25) $\cos\left(x-\frac{\pi}{2}\right) = \sin x$ ✓

$\cos x\cos\frac{\pi}{2} + \sin x\sin\frac{\pi}{2}$

$\cos x(0) + \sin x(1)$

$\sin x$ ✓

(47) $\sin(x-y) + \sin(x+y) = 2\sin x\cos y$ ✓

$\sin x\cos y - \sin y\cos x + \sin x\cos y + \sin y\cos x$

$2\sin x\cos y$ ✓

(48) $\cos(x-y) + \cos(x+y) = 2\cos x\cos y$ ✓

$\cos x\cos y + \sin x\sin y + \cos x\cos y - \sin x\sin y$

$2\cos x\cos y$ ✓

Solutions

① $\sin 15° = \sin(45°-30°) = \sin 45\cos 30 - \cos 45\sin 30$

$= \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) = \boxed{\frac{\sqrt{6}-\sqrt{2}}{4}}$

③ $\sin 75° = \sin(45°+30°) = \sin 45\cos 30 + \cos 45\sin 30$

$= \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) + \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) = \boxed{\frac{\sqrt{6}+\sqrt{2}}{4}}$

④ $\cos 75° = \cos(45°+30°) = \cos 45°\cos 30° - \sin 45°\sin 30°$

$\left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) \quad \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) \quad \boxed{\frac{\sqrt{6}-\sqrt{2}}{4}}$

④ $\cos 75° = \cos(45° + 30°) = \cos 45°\cos 30° - \sin 45°\sin 30°$

$= \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) = \boxed{\frac{\sqrt{6} - \sqrt{2}}{4}}$

⑨ $\cos\frac{7\pi}{12} = \cos\left(\frac{4\pi}{12} + \frac{3\pi}{12}\right) = \cos\left(\frac{\pi}{3} + \frac{\pi}{4}\right) = \cos\frac{\pi}{3}\cos\frac{\pi}{4} - \sin\frac{\pi}{3}\sin\frac{\pi}{4}$

$= \left(\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right) - \left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) = \boxed{\frac{\sqrt{2} - \sqrt{6}}{4}}$

⑩ $\sin -\frac{\pi}{12} = \sin\left(\frac{3\pi}{12} - \frac{4\pi}{12}\right) = \sin\frac{\pi}{4}\cos\frac{\pi}{3} - \cos\frac{\pi}{4}\sin\frac{\pi}{3}$

$= \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) = \boxed{\frac{\sqrt{2} - \sqrt{6}}{4}}$

⑪ $\sin(42 - 17) = \boxed{\sin 25°}$ ⑫ $\cos(94 - 18) = \boxed{\cos 76°}$ ⑬ $\sin\left(\frac{\pi}{5} + \frac{\pi}{2}\right) = \sin\left(\frac{2\pi}{10} + \frac{5\pi}{10}\right)$

$= \boxed{\sin\frac{7\pi}{10}}$