Giải bài 1 trang 153 sgk toán Đại Số lớp 10

Đề bài: Tính

a) $\cos 225^0$, $\sin 240^0$, $\cot(-15^0)$, $\tan 75^0$;

b) $\sin \frac{7\pi}{12}$, $\cos\left(-\frac{\pi}{12}\right)$, $\tan\left(\frac{13\pi}{12}\right)$

Đáp án:

a) $\cos 225^0 = \cos(180^0 + 45^0) = -\cos 45^0$

$= -\frac{\sqrt{2}}{2}$

+) $\sin 240^0 = \sin(180^0 + 60^0)$

$= -\sin 60^0 = -\frac{\sqrt{3}}{2}$

+) $\cot(-15^0) = -\cot 15^0$

$= -\tan 75^0 = -\tan(30^0 + 45^0)$

$= \frac{-\tan 30^0 - \tan 45^0}{1 - \tan 30^0 \tan 45^0}$

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

$= -2 - \sqrt{3}$

+) $\tan 75^0 = \cot 15^0 = 2 + \sqrt{3}$

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

$= \sin\frac{\pi}{3}\cos\frac{\pi}{4} + \cos\frac{\pi}{3}\sin\frac{\pi}{4}$

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

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

$= \cos\frac{\pi}{4}\cos\frac{\pi}{3} + sin\frac{\pi}{3}sin\frac{\pi}{4}$

$= \frac{\sqrt{2}}{2}\left(\frac{\sqrt{3}}{2}+\frac{1}{2}\right) = 0,9659$

+) $\tan\left(\frac{13\pi}{12}\right) = \tan(\pi+\frac{\pi}{12})$

$= \tan\frac{\pi}{12} = \tan\left(\frac{\pi}{3}-\frac{\pi}{4}\right)$

$= \frac{\tan\frac{\pi}{3}-\tan\frac{\pi}{4}}{1+\tan\frac{\pi}{3}\tan\frac{\pi}{4}} = \frac{\sqrt{3}-1}{1+\sqrt{3}} = 2-\sqrt{3}$