$\cos\left(\frac{5\pi}{3}\right) = \frac{1}{2}$

$\sin\left(\frac{5\pi}{3}\right) = \frac{\sqrt{3}}{2}$ ✓

$\cos\left(\frac{5\pi}{3}\right) = \cancel{\cos\left(360 \cdot \frac{\pi}{180}\right)}$

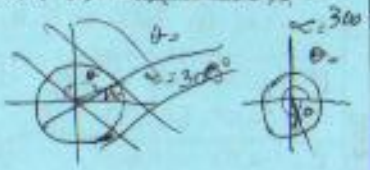
$= \cancel{\cos\left(\frac{3\pi}{180}\right)}$

$\left(\frac{5\pi}{3}\right) \times \left(\frac{180}{\pi}\right) = 300°$

$\left[\frac{N\pi}{N} \quad \frac{N}{N\pi} = \frac{N}{N} \times \frac{N}{N}\right]$

$\cancel{\cos(30) = \cos(90) = \cos(90)}$

$\cancel{\cos(30) = \cos(180 - 30) =}$



$\cancel{\cos(30°) = \frac{A}{4}}$ $\cancel{\cos(\theta) = 360 - 300}$

$\cancel{\cos\left(\frac{\sqrt{3}}{2}\right) =}$

$\cancel{\cos(\theta) = 60° = \frac{1}{2}}$

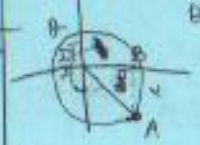
$\cancel{\theta = 300 - 60}$ $300 - 270 = 30$

$\cos(\theta) = 30° = \frac{\sqrt{3}}{2}$

$\sin(\theta) = 30° = \frac{1}{2}$

| | | |
|---|---|---|
| $\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$ | $\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$ | 30° |
| $\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$ | $\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$ | 45° |
| $\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$ | $\left(\frac{\pi}{3}\right) = \frac{1}{2}$ | 60° |

**10**



$\theta = \frac{5\pi}{3}$ $\alpha = \frac{\sqrt{3}}{2} = \frac{\pi}{3}$

$OB = \cos\left(\frac{\pi}{6}\right) = \frac{1}{2}$

$AB = \sin\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$

$\frac{1}{2}$ ; $-\frac{\sqrt{3}}{2}$

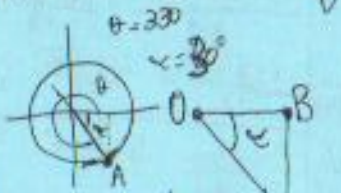
**12**

$\cos(330°) = \frac{\sqrt{3}}{2}$

$\sin(330°) = -\frac{1}{2}$ ✓

$\theta = 330$

$\alpha = 30°$



$BO = \cos(30°) = \frac{\sqrt{3}}{2}$

$AB = \sin(30°) = \frac{1}{2}$

$AB = \cos(30) = \frac{\pi}{6} = \frac{\sqrt{3}}{2}$ // BO

$BO = \sin(30) = \frac{\pi}{6} = \frac{1}{2}$ // $\Delta$ AB

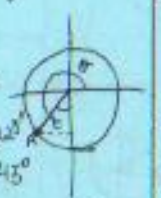
$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

**13**

$\cos\left(\frac{5\pi}{4}\right) = -\frac{\pi}{4}$

$\sin\left(\frac{5\pi}{4}\right) = -\frac{\pi}{4}$ ✓

$\left(\frac{5\pi}{4}\right)\left(\frac{180}{\pi}\right) = 225°$



$\theta = 225°$

$\alpha = 45°$

$OB = \cos(45) = \frac{\sqrt{2}}{2} \cdot \frac{\pi}{4}$

$AB = \sin(45) = \frac{\sqrt{2}}{2} \cdot \frac{\pi}{4}$

$\left[\frac{225}{45} = 5 \left| \frac{5\pi}{4} = 5 \cdot \frac{\pi}{4}\right.\right]$

**14**

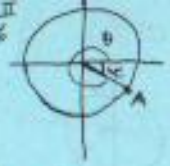
$\cos\left(\frac{-11\pi}{6}\right) = \frac{\sqrt{3}}{2}$

$\sin\left(\frac{-11\pi}{6}\right) = \frac{1}{2}$

$\theta = \frac{5\pi}{3}$ $\alpha = \frac{\sqrt{3}}{2} = \frac{\pi}{3}$

$\theta = 330° = \frac{11\pi}{6}$

$\alpha = 30°$



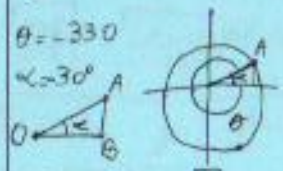
$\frac{11\pi}{6} - \frac{\pi}{6} = 11$

$\frac{\pi}{6} \cdot 11 = \frac{11\pi}{6} = 11 \cdot \frac{1}{2}$

$\frac{\pi}{6} = 30$ $30 \cdot 11 = 330$

$\theta = -330$

$\alpha = 30°$



$OB = \cos(30) = \frac{\sqrt{3}}{2}$

$BA = \sin(30) = +\frac{1}{2}$

$\alpha = \frac{\pi}{6}$

$\theta = -\frac{11\pi}{6}$ ✓

**15**

$\cos\left(-\frac{2\pi}{3}\right) = -\frac{\sqrt{2}}{2}$

$\sin\left(-\frac{2\pi}{3}\right) = -\frac{1}{2}$ ✓

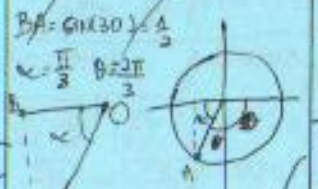
$-\frac{2\pi}{3} : \frac{\pi}{3} = 2 - 2 \times \frac{\pi}{3} = -60°$

$\theta = -60$ $\alpha = 30$

$OB = \cos(30) = \frac{\sqrt{3}}{2}$

$BA = \sin(30) = \frac{1}{2}$

$\alpha = \frac{\pi}{3}$ $\theta = \frac{2\pi}{3}$

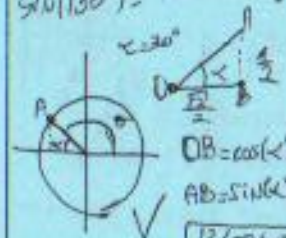


$OB = \cos(60) = -\frac{1}{2}$

$AB = \sin(60) = \frac{\sqrt{3}}{2}$

$\cos(150°) = 180 - 150 = 30 = \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\sin(150°) = 180 - 150 = 30 = \frac{\pi}{6} = \frac{1}{2}$



$OB = \cos(\alpha) = \frac{\sqrt{3}}{2}$

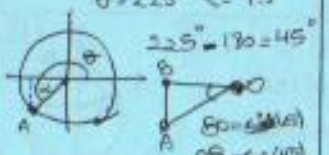
$AB = \sin(\alpha) = \frac{1}{2}$ ✓

**16**

$\cos(225°) = -\frac{\sqrt{2}}{2}$

$\sin(225) = -\frac{\sqrt{2}}{2}$ ✓

$\theta = 225°$ $\alpha = 45°$



$225° - 180 = 45°$

$BO = \cos(45)$

$AB = \sin(45)$

**18**

$\cos\left(\frac{3\pi}{4}\right) = \frac{\sqrt{2}}{2}$ ✓

$\sin\left(\frac{3\pi}{4}\right) = \frac{\sqrt{2}}{2}$

$\theta = 135$ $\alpha = 45°$

$\frac{\pi}{4} = 45°$

$\frac{3\pi}{4} = 135°$

$AB = \sin(\alpha)$

$BO = \cos(\alpha)$

$AB = \sin(y) = \frac{\sqrt{2}}{2}$

$BO = \cos(y) = \frac{\sqrt{2}}{2}$

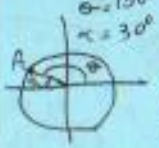
**19**

$\cos(150°) = -\frac{\sqrt{3}}{2}$

$\sin(150°) = \frac{1}{2}$

$\theta = 150$

$\alpha = 30°$



$AB = \sin(\alpha) = \frac{1}{2}$

$BO = \cos(\alpha) = \frac{\sqrt{3}}{2}$

**20**

$\cos\left(\frac{-11\pi}{6}\right) = \frac{\sqrt{3}}{2} = -\frac{\sqrt{3}}{2} = -\frac{1}{2}$

$\sin\left(\frac{-11\pi}{6}\right) = -\frac{1}{2}$ $\frac{1}{2}$ $\frac{\sqrt{3}}{2}$

$\theta = \frac{11\pi}{6} = 11 \cdot 30 = 330°$

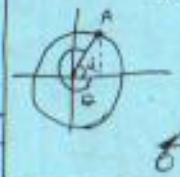
$BO = \cos(\alpha)$

$BA = \sin(\alpha)$

$\cos\left(\frac{11}{6}\right) = \frac{\pi}{6} = \frac{1}{2}$

$\sin\left(-\frac{11}{6}\right) = \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\theta = \frac{11\pi}{6} = 11 \cdot 30 = -330$



$\alpha = 360 - 330 = 30 = \frac{\pi}{6}$

$AB = \sin(\alpha) = \frac{1}{2}$

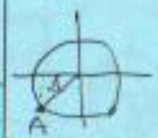
$BO = \cos(\alpha) = \frac{\sqrt{3}}{2}$

**21**

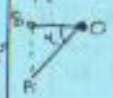
$\cos\left(\frac{5\pi}{4}\right) = -\frac{\sqrt{2}}{2}$ ✓

$\sin\left(\frac{5\pi}{4}\right) = -\frac{\sqrt{2}}{2}$

$\frac{\pi}{4} = 45°$ $\frac{4\pi}{4} = 180°$



$\frac{5\pi}{4} = 225°$



$BO = \cos(\alpha) = \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$

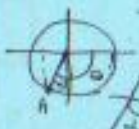
$BA = \sin(\alpha) = \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$

**22**

$\cos\left(-\frac{2\pi}{3}\right) = -\frac{\sqrt{3}}{2}$ ✓

$\sin\left(-\frac{2\pi}{3}\right) = -\frac{1}{2}$

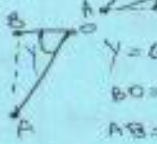
$\frac{\pi}{3} = 60° \quad -\frac{2\pi}{3} = -120°$



$\theta = -120$ $\alpha = 30$

$\cancel{BO = \cos(\alpha) = \frac{\sqrt{3}}{2}}$

$AB = \sin(\alpha) = -\frac{1}{2}$



$y = 60$

$BO = \cos(y) = -\frac{1}{2}$

$AB = \sin(y) = -\frac{\sqrt{3}}{2}$

**23**

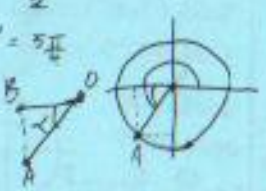
$\cos(225°) = -\frac{\sqrt{2}}{2}$

$\sin(225°) = -\frac{\sqrt{2}}{2}$ ✓

$\theta = 225 = 5 \cdot 45° = 5\frac{\pi}{4}$

$BO = \cos\left(\frac{\pi}{4}\right)$

$AB = \sin\left(\frac{\pi}{4}\right)$



**24**

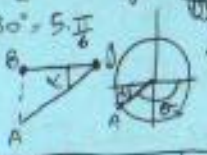
$\cos(-150°) = -\frac{\sqrt{3}}{2}$

$\sin(-150°) = -\frac{1}{2}$ ✓

$\theta = -150 = 5 \cdot 30° = 5 \cdot \frac{\pi}{6}$

$BO = \cos\left(\frac{\pi}{6}\right)$

$BA = \sin\left(\frac{\pi}{6}\right)$



**25**

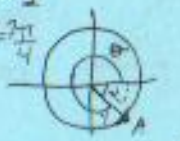
$\cos(315°) = -\frac{\sqrt{2}}{2}$

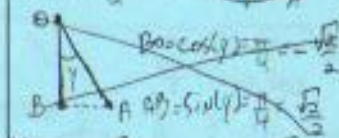
$\sin(315°) = \frac{\sqrt{2}}{2}$

$\theta = 315° = 45 \cdot 7° = \frac{7\pi}{4}$

$\alpha = 45° = \frac{\pi}{4}$

$y = 45° = \frac{\pi}{4}$





$BO = \cos(y) = \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$

$AB = \sin(y) = \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$BO = \cos(\alpha) = \frac{\sqrt{2}}{2}$

$AB = \cos(\alpha) = -\frac{\sqrt{2}}{2}$

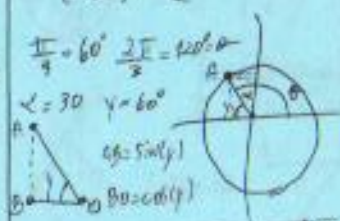
**26**

$\cos\left(\frac{2\pi}{3}\right) = -\frac{1}{2}$

$\sin\left(\frac{2\pi}{3}\right) = \frac{\sqrt{3}}{2}$

$\frac{\pi}{3} = 60° \quad \frac{2\pi}{3} = 120° = \theta$

$\alpha = 30$ $y = 60°$



$OA = \sin(y)$

$BO = \cos(y)$

**27**

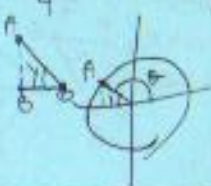
$\cos(135°) = -\frac{\sqrt{2}}{2}$

$\sin(135°) = \frac{\sqrt{2}}{2}$

$135 = 45 \cdot 3 = \frac{3\pi}{4} = \theta$ $y = 45° = \frac{\pi}{4}$

$AB = \sin\left(\frac{\pi}{4}\right)$

$BO = \cos\left(\frac{\pi}{4}\right)$

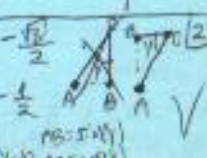


**28**

$\cos\left(\frac{4\pi}{3}\right) = -\frac{\sqrt{3}}{2}$

$\sin\left(\frac{4\pi}{3}\right) = -\frac{1}{2}$ ✓

$\theta = 240$



$AB = \sin(\alpha)$

$BO = \cos(\alpha)$