

$$\sin \theta = \frac{-7}{25}$$

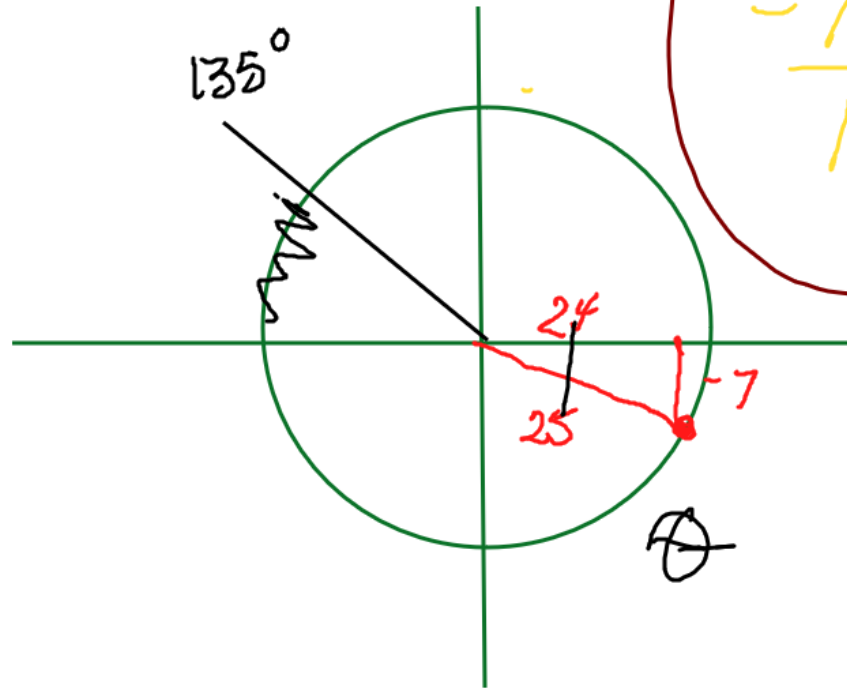
$$270 < \theta < 360$$

Find $\cos \frac{\theta}{2}$

$$135 < \frac{\theta}{2} < 180$$

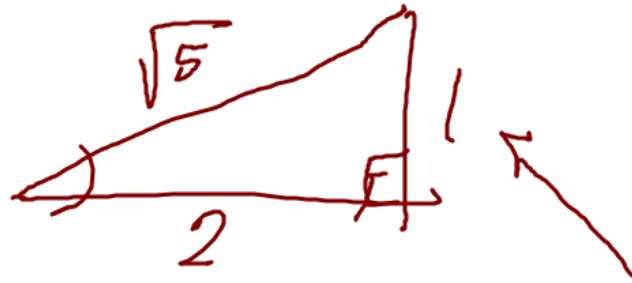
$\cos \frac{\theta}{2} \rightarrow$ negative!

$$\begin{aligned} \cos \frac{\theta}{2} &= -\sqrt{\frac{1 + \cos \theta}{2}} = -\sqrt{\frac{1 + \frac{24}{25}}{2}} = -\sqrt{\frac{\frac{49}{25}}{2}} = -\sqrt{\frac{49}{50}} = -\frac{7\sqrt{2}}{5\sqrt{2} \cdot \sqrt{2}} \end{aligned}$$



$$\frac{-7\sqrt{2}}{10}$$

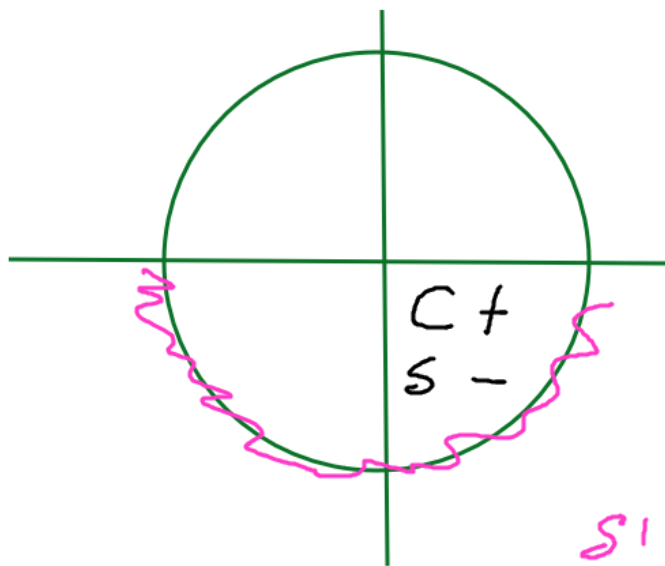
$$\cos \theta = \frac{2\sqrt{5}}{5} = \frac{2}{\sqrt{5}}$$



find $\sin \frac{\theta}{2}$

$$\sin \frac{\theta}{2} = + \sqrt{\frac{1 - \cos \theta}{2}} = \sqrt{\frac{\frac{5}{5} - \frac{2\sqrt{5}}{5}}{2}} = \sqrt{\frac{5 - 2\sqrt{5}}{5}} \cdot \frac{1}{2}$$

$$\frac{\sqrt{5 - 2\sqrt{5}}}{\sqrt{10}}$$



$$270 < \theta < 360$$

$$\rightarrow \sin \theta$$

$$540 < 2\theta < 720$$

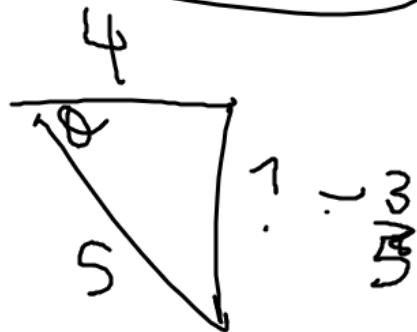
Negative

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$= 2 \left(-\frac{3}{5} \right) \left(\frac{4}{5} \right)$$

$$= \frac{-24}{25}$$

$$\cos \theta = \frac{4}{5}$$



$$\cos(2x) = 1 - \underline{2\sin^2 x}$$

$$2\sin^2 x + (\cos 2x) = 1$$

$$\underline{2\sin^2 x} = \underline{1 - \cos 2x}$$

$$\sin^2 x = \frac{1 - \cos 2x}{2}$$

Squared Identities

$$\cos(2x) = \frac{2\cos^2 x}{+1} - \frac{1}{+1}$$

$$\underline{2\cos^2 x} = \underline{1 + \cos 2x}$$

$$\cos^2 x = \frac{1 + \cos 2x}{2}$$

$$\tan^2 x = \frac{\sin^2 x}{\cos^2 x}$$

$$= \frac{\frac{1 - \cos 2x}{2}}{\frac{1 + \cos 2x}{2}}$$

$$= \frac{1 - \cos 2x}{1 + \cos 2x}$$

$$\sin^2\left(\frac{\pi}{12}\right) = \frac{1 - \cos\left(2\frac{\pi}{12}\right)}{2} = \frac{1 - \cos\left(\frac{\pi}{6}\right)}{2} = \frac{1 - \frac{\sqrt{3}}{2}}{2} = \frac{\frac{2}{2} - \frac{\sqrt{3}}{2}}{\textcircled{2}}$$

$$\frac{2 - \sqrt{3}}{2} \cdot \frac{1}{2} = \frac{2 - \sqrt{3}}{4}$$

. 066987

. 066987