

4-13-18 1st Trig

$$\textcircled{1} \cos(90^\circ + \theta)$$

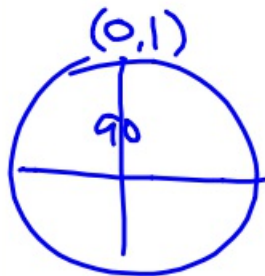
$$= \cos \alpha \cdot \cos B - \sin \alpha \cdot \sin B$$

$$\cos 90^\circ \cdot \cos \theta - \sin 90^\circ \cdot \sin \theta$$

$$0 \cdot \cos \theta - 1 \cdot \sin \theta$$

$$0 - \sin \theta$$

$$- \sin \theta$$



$$\textcircled{2} \cos(180^\circ - \theta)$$

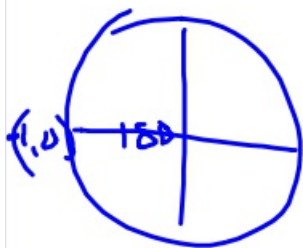
$$\cos \alpha \cdot \cos B + \sin \alpha \cdot \sin B$$

$$\cos 180^\circ \cdot \cos \theta + \sin 180^\circ \cdot \sin \theta$$

$$-1 \cdot \cos \theta + 0 \cdot \sin \theta$$

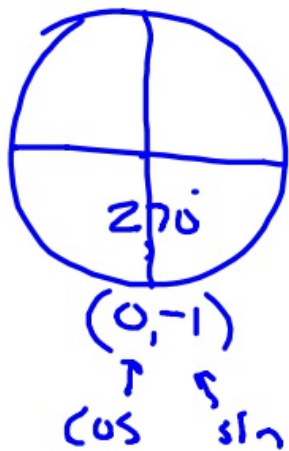
$$- \cos \theta + 0$$

$$- \cos \theta$$



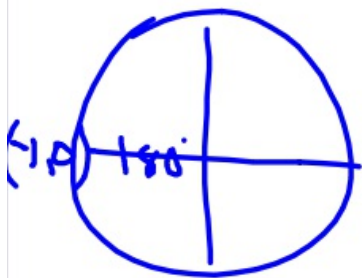
$$\textcircled{3} \sin(270^\circ - \theta)$$

$$\begin{aligned} \sin(\alpha - \beta) &= \sin \alpha \cdot \cos \beta - \sin \beta \cdot \cos \alpha \\ &= \sin 270^\circ \cdot \cos \theta - \sin \theta \cdot \cos 270^\circ \\ &= -1 \cdot \cos \theta - \sin \theta \cdot 0 \\ &= -\cos \theta \end{aligned}$$



$$\textcircled{4} \sin(180^\circ - \theta)$$

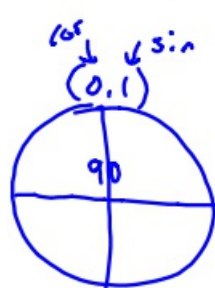
$$\begin{aligned} \sin(\alpha - \beta) &= \sin \alpha \cdot \cos \beta - \sin \beta \cdot \cos \alpha \\ &= \sin 180^\circ \cdot \cos \theta - \sin \theta \cdot \cos 180^\circ \\ &\quad \downarrow \qquad \qquad \qquad \downarrow \\ &= 0 \cdot \cos \theta - \sin \theta \cdot -1 \\ &= 0 - -\sin \theta \\ &= \sin \theta \end{aligned}$$



4-13-18 3rd Trig

$$\textcircled{1} \cos(90^\circ - \theta)$$

$$\cos(\alpha - \beta) = \cos\alpha \cdot \cos\beta + \sin\alpha \cdot \sin\beta$$



$$= \cos 90^\circ \cdot \cos \theta + \sin 90^\circ \cdot \sin \theta$$

$$= 0 \cdot \cos \theta + 1 \cdot \sin \theta$$

$$= 0 + \sin \theta$$

$$\sin \theta$$

$$\textcircled{2} \cos(180^\circ - \theta)$$

$$\cos(\alpha - \beta) = \cos\alpha \cdot \cos\beta + \sin\alpha \cdot \sin\beta$$

$$= \cos 180^\circ \cdot \cos \theta + \sin 180^\circ \cdot \sin \theta$$

$$= -1 \cdot \cos \theta + 0 \cdot \sin \theta$$



$$= -\cos \theta$$

$$\textcircled{3} \sin(90^\circ + \theta)$$

$$\sin(\alpha + \beta) = \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha$$



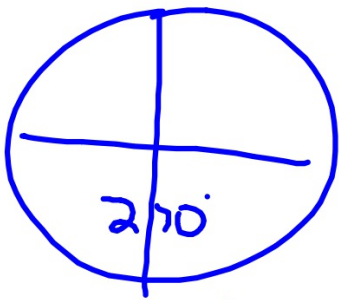
$$= \sin 90^\circ \cdot \cos \theta + \sin \theta \cdot \cos 90^\circ$$

$$= 1 \cdot \cos \theta + \sin \theta \cdot 0$$

$$\cos \theta$$

$$\textcircled{4} \sin(270^\circ + \theta)$$

$$\sin(\alpha + \beta) = \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha$$



$(0, -1)$
 \uparrow \uparrow
 \cos \sin

$$\sin 270^\circ \cdot \cos \theta + \sin \theta \cdot \cos 270^\circ$$

$$-1 \cdot \cos \theta + \sin \theta \cdot 0$$

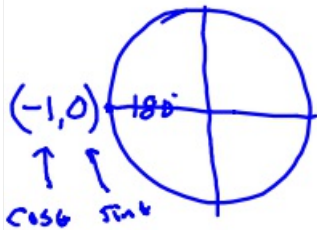
$$-\cos \theta + 0$$

$$-\cos \theta$$

4-13-18 4th Trig

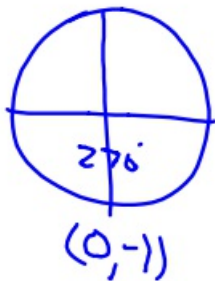
$$\textcircled{1} \cos(180^\circ - \theta)$$

$$\begin{aligned} \cos(\alpha - \beta) &= \cos \alpha \cdot \cos \beta + \sin \alpha \cdot \sin \beta \\ &= \cos 180^\circ \cdot \cos \theta + \sin 180^\circ \cdot \sin \theta \\ &\quad \downarrow \quad \downarrow \quad \downarrow \\ &= -1 \cdot \cos \theta + 0 \cdot \sin \theta \\ &= -\cos \theta + 0 \\ &= -\cos \theta \end{aligned}$$



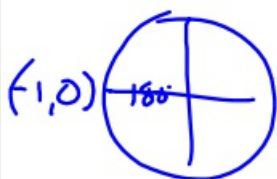
$$\textcircled{2} \cos(270^\circ - \theta)$$

$$\begin{aligned} \cos(\alpha - \beta) &= \cos \alpha \cdot \cos \beta + \sin \alpha \cdot \sin \beta \\ &= \cos 270^\circ \cdot \cos \theta + \sin 270^\circ \cdot \sin \theta \\ &= 0 \cdot \cos \theta + -1 \cdot \sin \theta \\ &= 0 - 1 \sin \theta \\ &= -\sin \theta \end{aligned}$$



$$\textcircled{3} \sin(180^\circ + \theta)$$

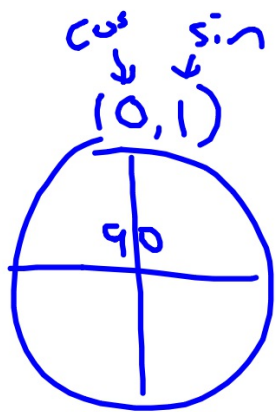
$$\begin{aligned} \sin(\alpha + \beta) &= \sin \alpha \cdot \cos \beta + \sin \beta \cdot \cos \alpha \\ &= \sin 180^\circ \cdot \cos \theta + \sin \theta \cdot \cos 180^\circ \\ &= \cancel{0 \cos \theta} + \sin \theta \cdot -1 \\ &= -\sin \theta \end{aligned}$$



$$\sin(100) = \cos 10^\circ$$

$$\textcircled{4} \quad \sin(\underbrace{90}_\alpha + \underbrace{\theta}_B)$$

$$\sin(\alpha + \beta) = \sin \alpha \cdot \cos \beta + \sin \beta \cdot \cos \alpha$$



$$= \sin 90 \cdot \cos \theta + \sin \theta \cdot \cos 90^\circ$$

$$1 \cdot \cos \theta + \sin \theta \cdot 0$$

$$= \cos \theta$$