

4-17-18 1<sup>st</sup> Trig

10 minutes left... long quiz

$$\sin(\underbrace{\theta}_\alpha + \underbrace{\theta}_\beta)$$

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

$$\sin\theta \cdot \cos\theta + \sin\theta \cdot \cos\theta$$

$$2 \cdot \sin\theta \cdot \cos\theta$$

$$\sin(2\theta) = 2 \cdot \sin\theta \cdot \cos\theta$$

$$\cos(\underbrace{\theta}_\alpha + \underbrace{\theta}_\beta) =$$

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

$$\cos\theta \cdot \cos\theta - \sin\theta \cdot \sin\theta$$

$$\cos(2\theta) = \cos^2\theta - \sin^2\theta$$

$$\cos^2\theta = 1 - \sin^2\theta \quad \begin{array}{l} \uparrow \\ \text{sub in there} \end{array}$$

$$\cos(2\theta) = 1 - \sin^2\theta - \sin^2\theta$$

$$\cos(2\theta) = 1 - 2\sin^2\theta$$

$$\cos(2\theta) = \cos^2\theta - \sin^2\theta$$

$$\sin^2\theta = 1 - \cos^2\theta \quad \begin{array}{l} \uparrow \\ \text{sub in there} \end{array}$$

$$\cos(2\theta) = \cos^2\theta - (1 - \cos^2\theta)$$

$$\cos^2\theta - 1 + \cos^2\theta$$

$$\cos(2\theta) = 2\cos^2\theta - 1$$

4-17-18 3<sup>rd</sup> Trig

Double Angles

$$\begin{aligned} & \sin(2\theta) \\ & \sin(\theta + \theta) \\ \sin(\alpha + \beta) &= \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha \\ &= \sin\theta \cdot \cos\theta + \sin\theta \cdot \cos\theta \end{aligned}$$

$$\boxed{\sin(2\theta) = 2 \sin\theta \cdot \cos\theta}$$

$\cos(2\theta)$

$$\begin{aligned} & \cos(\theta + \theta) \\ \cos(\alpha + \beta) &= \cos\alpha \cdot \cos\beta - \sin\alpha \cdot \sin\beta \\ & \cos\theta \cdot \cos\theta - \sin\theta \cdot \sin\theta \end{aligned}$$

$$\boxed{\cos(2\theta) = \cos^2\theta - \sin^2\theta}$$

$$\cos^2\theta = 1 - \sin^2\theta$$

$$1 - \sin^2\theta - \sin^2\theta$$

$$\boxed{\cos(2\theta) = 1 - 2\sin^2\theta}$$

$$\sin^2\theta = 1 - \cos^2\theta$$

$$\begin{aligned} \cos(2\theta) &= \cos^2\theta - \sin^2\theta \\ &= \cos^2\theta - (1 - \cos^2\theta) \\ &= \cos^2\theta - 1 + \cos^2\theta \\ &= 2\cos^2\theta - 1 \end{aligned}$$

4-17-18 4<sup>th</sup> Trig

Double Angle

$$\sin(2\theta) = \sin(\theta + \theta)$$

$$\begin{aligned}\sin(\alpha + \beta) &= \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha \\ &= \sin\theta \cdot \cos\theta + \sin\theta \cdot \cos\theta\end{aligned}$$

$$\boxed{\sin(2\theta) = 2 \cdot \sin\theta \cdot \cos\theta}$$

$$\cos(\theta + \theta)$$

$$\begin{aligned}\cos(\alpha + \beta) &= \cos\alpha \cdot \cos\beta - \sin\alpha \cdot \sin\beta \\ &= \cos\theta \cdot \cos\theta - \sin\theta \cdot \sin\theta\end{aligned}$$

$$\boxed{\cos(2\theta) = \cos^2\theta - \sin^2\theta}$$

$$\cos^2\theta = \overset{\uparrow \text{sub in}}{1 - \sin^2\theta}$$

$$\cos(2\theta) = 1 - \sin^2\theta - \sin^2\theta$$

$$\boxed{\cos(2\theta) = 1 - 2\sin^2\theta}$$

$$\cos(2\theta) = \cos^2\theta - \sin^2\theta$$

$$\sin^2\theta = \overset{\curvearrowright}{1 - \cos^2\theta}$$

$$\cos(2\theta) = \cos^2\theta - (1 - \cos^2\theta)$$

$$= \cos^2\theta - 1 + \cos^2\theta$$

$$\boxed{\cos(2\theta) = 2\cos^2\theta - 1}$$