

5-4-2 Cofunction & Reduction Identities

* Cofunction identity add/subtract 90° to get a different trig function $\sin(x-90) = \cos x$

* Reduction identity simplifies a trig expression by adding multiples of 90° .

Ex 5 Verify a Cofunction

Verify $\sin\left(\frac{\pi}{2} - x\right) = \cos x$

$$\sin \frac{\pi}{2} \cos x - \cos \frac{\pi}{2} \sin x =$$

$$(1) \cos x - (0) \sin x =$$

$$\cos x = \cos x \therefore$$

$$\sin -$$

$$s \cos \beta - c \sin \beta$$

evaluate known angles

b) $\cos\left(\frac{\pi}{2} - x\right) = \sin x$

$$\cos \frac{\pi}{2} \cos x + \sin \frac{\pi}{2} \sin x$$

$$(0) \cos x + 1 \sin x$$

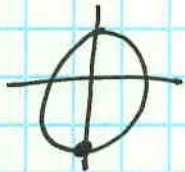
$$\sin x = \sin x \therefore$$

$$\cos -$$

$$c \sin \beta + s \cos \beta$$

Ex 6 a) Verify Reduction Identity

$$a) \sin\left(\theta + \frac{3\pi}{2}\right) = -\cos\theta$$



(0, -1)

$$\sin\theta \cos\frac{3\pi}{2} + \cos\theta \sin\frac{3\pi}{2} =$$

$$\sin\theta (0) + \cos\theta (-1) =$$

$$-\cos\theta = -\cos\theta \therefore$$

$$\sin\theta + \cos\theta \sin\beta$$

$$b) \tan(x - 180^\circ) = \tan x$$

$$\frac{\tan x - \tan 180}{1 + \tan x \tan 180}$$

$$\frac{\tan x - 0}{1 + \tan x (0)}$$

$$\frac{\tan x}{1} = \tan x \therefore$$

$$\frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$$

341: 4, 5, 15, 20, 21, 33, 36-38

* #33 hint convert to $\frac{1}{\cos(\alpha + \beta)}$