IDENTITIES REVIEW with

Sum & Product Identities

Purpose — to swith addition/subtraction of sinx/cos functions to multiplication or vice versa.

$$\sin 40° - \sin 100° = 2 \cos\left(\frac{40° + 100°}{2}\right) \sin\left(\frac{40° - 100°}{2}\right)$$

$$= 2 \cos 70° \sin(-30°)$$

$$= -2 \cos 70° \sin 30°$$

Review
3

$$\cos 45° \sin 25° = \frac{1}{2}\left[\sin 70° - \sin 20°\right]$$

$$\frac{1}{2}\left[\sin(45° + 25°) - \sin(45° - 25°)\right]$$

$$\frac{1}{2}\left[\sin 70° - \sin 20°\right]$$

True

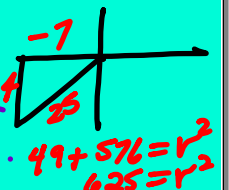<u>Test</u>   <u>Write 8 fund. identities</u>

6 J.F

1L-14)   Evaluate. — Use
          2 or 3   special
                      angle
                      values

15-20)   Draw a picture problems
             (A+B)

Verify = 4 problems

20/ Find $\cos\left(\dfrac{x}{2}\right)$

given $\cot x = \dfrac{7}{24}$ $\dfrac{x}{y}$ $\dfrac{-7}{24}$ $\dfrac{-7}{25}$

x in Q III

$49 + 576 = r^2$

$625 = r^2$

$25 = r$

$$\cos\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1+\cos x}{2}}$$

$180° < x < 270°$

Q II $= 90° < \dfrac{x}{2} < 135°$

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

$$= -\sqrt{\frac{1 + \frac{-7}{25}}{2}}$$

$$= -\sqrt{\frac{18}{25} \cdot \frac{1}{2}}$$

$$= -\sqrt{\frac{9}{25}}$$

$$= \boxed{-\frac{3}{5}}$$

21/ $4\sin^2\theta \cos^2\theta = 1 - \cos^2 2\theta$

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

$$= \left[2\sin\theta\cos\theta\right]^2$$

$$= 4\sin^2\theta\cos^2\theta$$