

## Warmup 4: Double and Half Angle Identities

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Given  $\cos x = \frac{4}{5}$  and  $\frac{3\pi}{2} < x < 2\pi$ , find:

a)  $\sin 2x$

a)  $\frac{-24}{25}$

b)  $\sin \frac{x}{2}$

b)  $\frac{\sqrt{10}}{10}$

c)  $\cos \frac{x}{2}$

c)  $\frac{-3\sqrt{10}}{10}$

d)  $\tan 2x$

d)  $\frac{-24}{7}$

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Find the exact value using the double or half angle identities:

e)  $\cos\left(\frac{7\pi}{3}\right)$

e)  $\frac{1}{2}$

f)  $\tan(105^\circ)$

f)  $-2 - \sqrt{3}$