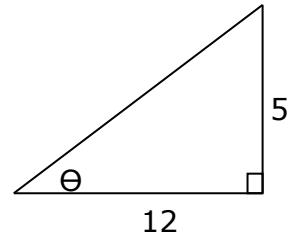


Use the figure to find the exact value of each trig function.

1.  $\cos \frac{\theta}{2}$

2.  $\sin \frac{\theta}{2}$

3.  $\tan \frac{\theta}{2}$



4.  $\sec \frac{\theta}{2}$

5.  $\csc \frac{\theta}{2}$

6.  $\cot \frac{\theta}{2}$

7.  $2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}$

8.  $2 \cos \frac{\theta}{2} \tan \frac{\theta}{2}$

Use the half-angle identities to determine the exact values of each function.

9.  $\sin 112^\circ 30'$

10.  $\cos \frac{\pi}{12}$

11.  $\tan \frac{3\pi}{8}$

Find the exact values of each trig function using the half-angle identities.

12. Given ...  $\sin x = \frac{5}{13}$ ,  $\frac{\pi}{2} < x < \pi$  ... find  $\sin \frac{x}{2}$

13. Given ...  $\cos x = \frac{7}{25}$ ,  $0 < x < \frac{\pi}{2}$  ... find  $\cos \frac{x}{2}$

14. Given ...  $\tan x = -\frac{8}{5}$ ,  $\frac{3\pi}{2} < x < 2\pi$  ... find  $\tan \frac{x}{2}$

15. Given ...  $\cot x = 7$   $\pi < x < \frac{3\pi}{2}$  ... find  $\cos \frac{x}{2}$