

MAC 1114 - Trigonometry

Use a half-angle identity to find the exact value of each expression.

1) $\sin 157\frac{1}{2}^\circ$

2) $\sin 165^\circ$

3) $\sin \theta = \frac{3}{5}$ and $0^\circ < \theta < 90^\circ$

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

4) $\sin \theta = -\frac{3}{5}$ and $270^\circ < \theta < 360^\circ$

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

Use a double-angle or half-angle identity to find the exact value of each expression.

5) $\sin \frac{2\pi}{3}$

6) $\sin \frac{11\pi}{12}$

7) $\sin \theta = -\frac{3}{5}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\sin 2\theta$

8) $\sin \theta = \frac{8}{17}$ and $\frac{\pi}{2} < \theta < \pi$

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

9) $\cos 120^\circ$

10) $\cos 300^\circ$

11) $\cos \theta = -\frac{15}{17}$ and $180^\circ < \theta < 270^\circ$

Find $\cos 2\theta$

12) $\cos \theta = \frac{24}{25}$ and $270^\circ < \theta < 360^\circ$

Find $\cos \frac{\theta}{2}$

13) $\cos \frac{\pi}{4}$

14) $\cos \frac{\pi}{6}$

15) $\cos \theta = \frac{4}{5}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\cos 2\theta$

16) $\cos \theta = -\frac{4}{5}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\cos \frac{\theta}{2}$

Use a half-angle identity to find the exact value of each expression.

17) $\tan 0^\circ$

18) $\tan 150^\circ$

19) $\tan \theta = -\frac{3}{4}$ and $90^\circ < \theta < 180^\circ$

Find $\tan \frac{\theta}{2}$

20) $\tan \theta = -\frac{3}{4}$ and $90^\circ < \theta < 180^\circ$

Find $\tan \frac{\theta}{2}$

21) $\tan \frac{5\pi}{6}$

22) $\tan \frac{\pi}{3}$

$$23) \tan \theta = -\frac{5}{12} \text{ and } \frac{3\pi}{2} < \theta < 2\pi$$

$$\text{Find } \tan \frac{\theta}{2}$$

$$24) \tan \theta = -\frac{3}{4} \text{ and } \frac{\pi}{2} < \theta < \pi$$

$$\text{Find } \tan \frac{\theta}{2}$$

$$25) \sec 75^\circ$$

$$26) \sec 165^\circ$$

$$27) \sec \frac{\pi}{4}$$

$$28) \csc \frac{5\pi}{6}$$

29) $\cot \theta = -\frac{12}{5}$ and $270^\circ < \theta < 360^\circ$

Find $\csc \frac{\theta}{2}$

30) $\csc \theta = \frac{5}{3}$ and $90^\circ < \theta < 180^\circ$

Find $\cot \frac{\theta}{2}$

MAC 1114 - Trigonometry

Use a half-angle identity to find the exact value of each expression.

1) $\sin 157\frac{1}{2}^\circ$

$$\frac{\sqrt{2 - \sqrt{2}}}{2}$$

2) $\sin 165^\circ$

$$\frac{\sqrt{6} - \sqrt{2}}{4}$$

3) $\sin \theta = \frac{3}{5}$ and $0^\circ < \theta < 90^\circ$

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

$$\frac{\sqrt{10}}{10}$$

4) $\sin \theta = -\frac{3}{5}$ and $270^\circ < \theta < 360^\circ$

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

$$\frac{\sqrt{10}}{10}$$

Use a double-angle or half-angle identity to find the exact value of each expression.

$$5) \sin \frac{2\pi}{3}$$

$$\frac{\sqrt{3}}{2}$$

$$6) \sin \frac{11\pi}{12}$$

$$\frac{\sqrt{6} - \sqrt{2}}{4}$$

$$7) \sin \theta = -\frac{3}{5} \text{ and } \pi < \theta < \frac{3\pi}{2}$$

Find $\sin 2\theta$

$$\frac{24}{25}$$

$$8) \sin \theta = \frac{8}{17} \text{ and } \frac{\pi}{2} < \theta < \pi$$

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

$$\frac{4\sqrt{17}}{17}$$

$$9) \cos 120^\circ$$

$$-\frac{1}{2}$$

$$10) \cos 300^\circ$$

$$\frac{1}{2}$$

11) $\cos \theta = -\frac{15}{17}$ and $180^\circ < \theta < 270^\circ$

Find $\cos 2\theta$

$$\frac{161}{289}$$

12) $\cos \theta = \frac{24}{25}$ and $270^\circ < \theta < 360^\circ$

Find $\cos \frac{\theta}{2}$

$$-\frac{7\sqrt{2}}{10}$$

13) $\cos \frac{\pi}{4}$

$$\frac{\sqrt{2}}{2}$$

14) $\cos \frac{\pi}{6}$

$$\frac{\sqrt{3}}{2}$$

15) $\cos \theta = \frac{4}{5}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\cos 2\theta$

$$\frac{7}{25}$$

16) $\cos \theta = -\frac{4}{5}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\cos \frac{\theta}{2}$

$$\frac{\sqrt{10}}{10}$$

Use a half-angle identity to find the exact value of each expression.

17) $\tan 0^\circ$

0

18) $\tan 150^\circ$

$-\frac{\sqrt{3}}{3}$

19) $\tan \theta = -\frac{3}{4}$ and $90^\circ < \theta < 180^\circ$

Find $\tan \frac{\theta}{2}$

3

20) $\tan \theta = -\frac{3}{4}$ and $90^\circ < \theta < 180^\circ$

Find $\tan \frac{\theta}{2}$

3

21) $\tan \frac{5\pi}{6}$

$-\frac{\sqrt{3}}{3}$

22) $\tan \frac{\pi}{3}$

$\sqrt{3}$

$$23) \tan \theta = -\frac{5}{12} \text{ and } \frac{3\pi}{2} < \theta < 2\pi$$

Find $\tan \frac{\theta}{2}$

$$-\frac{1}{5}$$

$$24) \tan \theta = -\frac{3}{4} \text{ and } \frac{\pi}{2} < \theta < \pi$$

Find $\tan \frac{\theta}{2}$

$$3$$

$$25) \sec 75^\circ$$

$$\sqrt{6} + \sqrt{2}$$

$$26) \sec 165^\circ$$

$$\sqrt{2} - \sqrt{6}$$

$$27) \sec \frac{\pi}{4}$$

$$\sqrt{2}$$

$$28) \csc \frac{5\pi}{6}$$

$$2$$

29) $\cot \theta = -\frac{12}{5}$ and $270^\circ < \theta < 360^\circ$

Find $\csc \frac{\theta}{2}$

$\sqrt{26}$

30) $\csc \theta = \frac{5}{3}$ and $90^\circ < \theta < 180^\circ$

Find $\cot \frac{\theta}{2}$

$\frac{1}{3}$