

Double and Half Angle Trig Identities

Name _____

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Date _____

Find the exact value of each.

1) $\cos \theta = -\frac{3}{5}$ where $\frac{\pi}{2} \leq \theta < \pi$

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

2) $\tan \theta = -\frac{4}{3}$ where $\frac{3\pi}{2} \leq \theta < 2\pi$

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

3) $\sin \theta = -\frac{4}{5}$ where $\frac{3\pi}{2} \leq \theta < 2\pi$

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

4) $\sin \theta = \frac{1}{2}$ where $\frac{\pi}{2} \leq \theta < \pi$

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

5) $\tan \theta = -3\sqrt{2}$ where $\frac{7\pi}{2} \leq \theta < 4\pi$

Find $\tan 2\theta$

6) $\sin \theta = \frac{4}{5}$ where $0 \leq \theta < \frac{\pi}{2}$

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

7) $\cos \theta = \frac{\sqrt{55}}{8}$ where $0 \leq \theta < \frac{\pi}{2}$

Find $\tan 2\theta$

8) $\sin \theta = -\frac{12}{13}$ where $\frac{3\pi}{2} \leq \theta < 2\pi$

Find $\sin 2\theta$

9) $\tan \theta = \frac{15}{8}$ where $0 \leq \theta < \frac{\pi}{2}$

Find $\cos 2\theta$

10) $\tan \theta = \frac{15}{8}$ where $0 \leq \theta < \frac{\pi}{2}$

Find $\sin 2\theta$

11) $\sin \theta = -\frac{4}{5}$ where $\pi \leq \theta < \frac{3\pi}{2}$
Find $\tan \frac{\theta}{2}$

12) $\sin \theta = \frac{12}{13}$ where $0 \leq \theta < \frac{\pi}{2}$
Find $\cos 2\theta$

13) $\cos \theta = \frac{3}{5}$ where $\frac{3\pi}{2} \leq \theta < 2\pi$
Find $\sin \frac{\theta}{2}$

14) $\sin \theta = \frac{5\sqrt{26}}{26}$ where $\frac{\pi}{2} \leq \theta < \pi$
Find $\cos 2\theta$

15) $\sin \theta = \frac{4}{5}$ where $\frac{\pi}{2} \leq \theta < \pi$
Find $\sin \frac{\theta}{2}$

16) $\tan \theta = 2$ where $0 \leq \theta < \frac{\pi}{2}$
Find $\sin 2\theta$

17) $\tan \theta = -\frac{12}{5}$ where $\frac{\pi}{2} \leq \theta < \pi$
Find $\tan \frac{\theta}{2}$

18) $\tan \theta = -\frac{12}{5}$ where $\frac{\pi}{2} \leq \theta < \pi$
Find $\tan 2\theta$

19) $\tan \theta = -\frac{4}{3}$ where $\frac{3\pi}{2} \leq \theta < 2\pi$
Find $\tan 2\theta$

20) $\cos \theta = -\frac{3}{5}$ where $\pi \leq \theta < \frac{3\pi}{2}$
Find $\tan 2\theta$

Answers to Double and Half Angle Trig Identities

$$1) \frac{\sqrt{5}}{5}$$

$$5) \frac{6\sqrt{2}}{17}$$

$$9) -\frac{161}{289}$$

$$13) \frac{\sqrt{5}}{5}$$

$$17) \frac{3}{2}$$

$$2) \frac{\sqrt{5}}{5}$$

$$6) \frac{2\sqrt{5}}{5}$$

$$10) \frac{240}{289}$$

$$14) -\frac{12}{13}$$

$$18) \frac{120}{119}$$

$$3) -\frac{2\sqrt{5}}{5}$$

$$7) \frac{3\sqrt{55}}{23}$$

$$11) -2$$

$$15) \frac{2\sqrt{5}}{5}$$

$$19) \frac{24}{7}$$

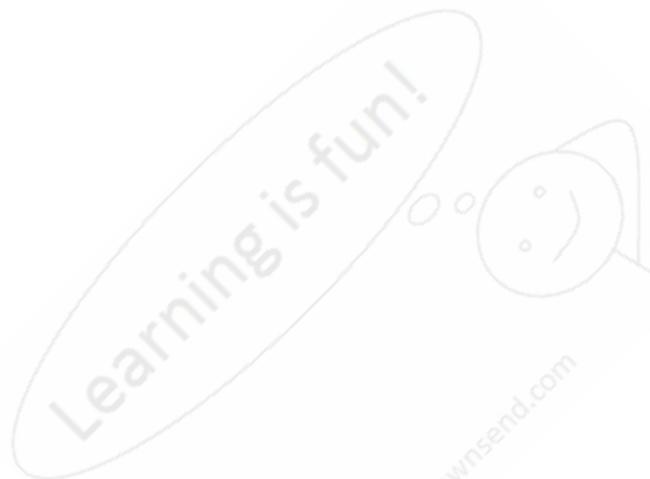
$$4) \frac{\sqrt{2-\sqrt{3}}}{2}$$

$$8) -\frac{120}{169}$$

$$12) -\frac{119}{169}$$

$$16) \frac{4}{5}$$

$$20) -\frac{24}{7}$$



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