Double and Half Angle Trig Identities

Name_____

Date_____

Find the exact value of each.

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

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

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

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

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

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

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

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

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

Find $\tan 2\theta$

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

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

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

Find $\tan 2\theta$

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

Find $\sin 2\theta$

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

Find $\cos 2\theta$

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

Find $\sin 2\theta$

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

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

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

Find $\cos 2\theta$

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

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

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

Find $\cos 2\theta$

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

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

16) $\tan\theta = 2$ where $0 \le \theta < \frac{\pi}{2}$

Find $\sin 2\theta$

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

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

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

Find $\tan 2\theta$

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

Find $\tan 2\theta$

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

Find $\tan 2\theta$

Answers to Double and Half Angle Trig Identities

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

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

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

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

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

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

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

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

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

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

11) -2

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

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

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

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

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

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

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

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

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

