Double and Half Angle Trig Identities

Name_____

Date_____

Find the exact value of each.

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

Find $\tan 2\theta$

2) $\sin\theta = \frac{\sqrt{195}}{14}$ where $2\pi \le \theta < \frac{5\pi}{2}$

Find $\cos 2\theta$

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

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

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

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

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

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

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

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

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

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

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

Find $\cos 2\theta$

9) $\sin\theta = \frac{\sqrt{7}}{4}$ where $\frac{\pi}{2} \le \theta < \pi$

Find $\cos 2\theta$

10) $\cos\theta = \frac{8}{17}$ where $0 \le \theta < \frac{\pi}{2}$

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

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

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

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

Find $\cos 2\theta$

13) $\tan\theta = -\frac{15}{8}$ where $\frac{3\pi}{2} \le \theta < 2\pi$

Find $\tan 2\theta$

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

Find $\cos 2\theta$

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

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

16) $\tan\theta = \frac{12}{5}$ where $\pi \le \theta < \frac{3\pi}{2}$

Find $\cos 2\theta$

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

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

18) $\cos\theta = \frac{3}{5}$ where $0 \le \theta < \frac{\pi}{2}$

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

19) $\cos\theta = -\frac{3}{5}$ where $3\pi \le \theta < \frac{7\pi}{2}$

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

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

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

Answers to Double and Half Angle Trig Identities

1) $\frac{12}{5}$

2) $-\frac{97}{98}$

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

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

5) -2

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

7) $-\frac{3}{2}$

8) $-\frac{7}{25}$

9) $\frac{1}{8}$

10) $\frac{3\sqrt{34}}{34}$

11) $-\frac{2\sqrt{13}}{13}$

12) $-\frac{21}{29}$

13) $\frac{240}{161}$

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

15) $\frac{3\sqrt{13}}{13}$

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

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

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

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

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

