

**Precalculus: 5.4 Homework Odd Answers**

1. 1                      3.  $-\frac{1}{2}$                       5.  $\sin(26)$                       7.  $\frac{1}{\sqrt{3}}$

9.  $\frac{\sqrt{2+\sqrt{2}}}{2}$                       11.  $2+\sqrt{3}$                       13.  $-\frac{\sqrt{2-\sqrt{3}}}{2}$                       15.  $-\frac{1}{2}$                       17.  $\cos\left(\frac{2\pi}{9}\right)$

19. Hint: Draw a triangle for  $2\alpha$  to find  $\cos(2\alpha)$ , then use an identity to find  $\cos(\alpha)$ , then draw another triangle for  $\alpha$ .

$$\begin{aligned} \cos \alpha &= -1/\sqrt{17} & \sec \alpha &= -\sqrt{17} \\ \sin \alpha &= 4/\sqrt{17} & \csc \alpha &= \sqrt{17}/4 \\ \tan \alpha &= -4 & \cot \alpha &= -1/4 \end{aligned}$$

21.  $\cos \alpha = -7/8$                        $\sec \alpha = -8/7$                       23.  $-\frac{161}{289}$   
 $\sin \alpha = -\sqrt{15}/8$                        $\csc \alpha = -8/\sqrt{15}$   
 $\tan \alpha = \sqrt{15}/7$                        $\cot \alpha = 7/\sqrt{15}$

$$\begin{aligned} 25. \cos^4 \theta - \sin^4 \theta &= (\cos^2 \theta + \sin^2 \theta)(\cos^2 \theta - \sin^2 \theta) \\ &= (1)(\cos(2\theta)) \\ &= \cos(2\theta) \end{aligned}$$

27.

$$\begin{aligned} \frac{\cos(2x) + \cos(2y)}{\sin x + \cos y} &= \frac{1 - 2\sin^2 x + 2\cos^2 y - 1}{\sin x + \cos y} \\ &= \frac{2\cos^2 y - 2\sin^2 x}{\sin x + \cos y} \\ &= \frac{2(\cos^2 y - \sin^2 x)}{\sin x + \cos y} \\ &= \frac{2(\cos y + \sin x)(\cos y - \sin x)}{\cos y + \sin x} \\ &= 2(\cos y - \sin x) \\ &= 2\cos y - 2\sin x \end{aligned}$$

29.  $\frac{\cos(2x)}{\sin^2 x} = \frac{1 - 2\sin^2 x}{\sin^2 x}$   
 $= \frac{1}{\sin^2 x} - \frac{2\sin^2 x}{\sin^2 x}$   
 $= \csc^2 x - 2$