

11. REV. 2 IDENTITIES AND EQUATIONS

work out the following problems on a separate sheet of paper.

In Problems 81–90, use the information given about the angles α and β to find the exact value of:

(a) $\sin(\alpha + \beta)$ (b) $\cos(\alpha + \beta)$

(e) $\sin(2\alpha)$ (f) $\cos(2\beta)$

86. $\tan \alpha = -\frac{4}{3}, \frac{\pi}{2} < \alpha < \pi; \cot \beta = \frac{12}{5}, \pi < \beta < \frac{3\pi}{2}$

In Problems 91–96, find the exact value of each expression.

94. $\cos\left[\tan^{-1}(-1) + \cos^{-1}\left(-\frac{4}{5}\right)\right]$

95. $\sin\left[2 \cos^{-1}\left(-\frac{3}{5}\right)\right]$

96. $\cos\left(2 \tan^{-1} \frac{4}{3}\right)$

In Problems 97–120, solve each equation on the interval $0 \leq \theta < 2\pi$.

97. $\cos \theta = \frac{1}{2}$

98. $\sin \theta = -\frac{\sqrt{3}}{2}$

99. $2 \cos \theta + \sqrt{2} = 0$

109. $\sin \theta + \sin(2\theta) = 0$

110. $\cos(2\theta) = \sin \theta$

111. $\sin(2\theta) - \cos \theta - 2 \sin \theta + 1 = 0$

112. $\sin(2\theta) - \sin \theta - 2 \cos \theta + 1 = 0$

117. $\sin(2\theta) = \sqrt{2} \cos \theta$

118. $1 + \sqrt{3} \cos \theta + \cos(2\theta) = 0$