**Precalculus Lesson 5.5**

**Double Angle and Half-Angle Formulas Practice Worksheet**

**Given** $sin θ= \frac{7}{25}$ **and 90°** $< θ <$ **180 °, find the exact value of each expression.**

**1.** cos $\frac{θ}{2}$ **2.** sin $\frac{θ}{2}$ **3.** tan $\frac{θ}{2}$

**4.** sec $\frac{θ}{2}$ **5.** csc $\frac{θ}{2}$ **6.** cot $\frac{θ}{2}$

**Given** $cos θ= -\frac{8}{17}$ **and 180°** $< θ <$ **270**°**, find the exact value of each expression.**

**7.** sin $\frac{θ}{2}$ **8.** cos $\frac{θ}{2}$ **9.** cot $\frac{θ}{2}$

**10.** tan $\frac{θ}{2}$ **11.** csc $\frac{θ}{2}$ **12.** sec $\frac{θ}{2}$

**Use a sum or difference formula to verify each identity.**

**13.** cos 2*θ* = cos2 *θ* - sin2 *θ* **14.** cos 2*θ* = 2 cos2 *θ* - 1

**Use a double-angle identity to find the exact value of each expression.**

**15.** sin $\frac{2π}{3}$ **16.** tan 600° **17.** sin 660°

**18.** cos 660° **19.** tan $\frac{π}{2}$ **20.** cos $\frac{π}{2}$

**21.** tan 660° **22.** sin $\frac{4π}{3}$ **23.** tan $\frac{2π}{3}$

**Use a half-angle identity to find the exact value of each expression.**

**24.** cos $\frac{π}{12}$ **25.** cos 7.5° **26.** tan 7.5°

**27.** sin 7.5° **28.** cos $\frac{π}{4}$ **29.** tan $\frac{π}{8}$

**30.** cos 22.5° **31.** sin $\frac{π}{2}$ **32.** cos $\frac{π}{2}$