Name: _____

Half Angle and Power Reducing Formulas

1) Use the half-angle formulas to determine the exact values of the sine, cosine, and tangent of the angle.

   1) -75^0
   2) 15^0
   3) $\dfrac{19\pi}{12}$
   4) $-\dfrac{17\pi}{12}$

2) Find the exact values of sin (u/2), cos(u/2), and tan(u/2) using the half-angle formulas.

   1) $\sin u = \dfrac{3}{5}, 0 < u < \pi/2$
   2) $\tan u = \dfrac{5}{8}, \pi < u < 3\pi/2$
   3) $\cos u = -\dfrac{2}{7}, \pi/2 < u < \pi$
   4) $\sec u = -6, \pi/2 < u < \pi$

3) Given that cot x = -5 and that 270 < x < 360, find $\sin\frac{x}{2}$; $\cos\frac{x}{2}$, and $\tan\frac{x}{2}$

4) Find the exact value of $\tan 22.5^0$ using the half angle identity

5) Given $\cos s = \dfrac{2}{3}$, with $\dfrac{3\pi}{2} < s < 2\pi$, find $\sin\frac{s}{2}$; $\cos\frac{s}{2}$, and $\tan\frac{s}{2}$

6) Use the power – reducing formulas to rewrite the expression in terms of the first power of the cosine

   1) $\cos^4 x$
   2) $\cos^2 x \sin^2 x$
   3) $\sin^2 x \cos^4 x$
   4) $\sin^8 x$
   5) $\sin^4 x \cos^4 x$
   6) $\sin^4 x \cos^2 x$