



Honors Alg. II  
Section 14.4 Worksheet

Name: Key

Find the exact solution to each equation for the interval  $0^\circ \leq x < 360^\circ$ .

1.)  $36\cos x = 18$

$\cos x = 0.5$   
 $x = \frac{\pi}{3}, \frac{5\pi}{3}$   
 $x = 60^\circ, 300^\circ$

2.)  $18\sin x = 9\sqrt{2}$

$\sin x = \frac{\sqrt{2}}{2}$   
 $x = \frac{\pi}{4}, \frac{3\pi}{4}$   
 $x = 45^\circ, 135^\circ$

3.)  $3\sec x = -6$

$\sec x = -2$   
 $\cos x = -\frac{1}{2}$   
 $x = \frac{2\pi}{3}, \frac{4\pi}{3}$   
 $x = 120^\circ, 240^\circ$

Find the exact solution to each equation for the interval  $0 \leq x < 2\pi$ .

4.)  $2\sin x - 2 = 0$

$\sin x = 1$   
 $x = \frac{\pi}{2}$

5.)  $2 + \sqrt{2} \csc x = 0$

$\sqrt{2} \csc x = -2$   
 $\csc x = -\frac{2}{\sqrt{2}}$   
 $\sin x = \frac{\sqrt{2}}{2}$   
 $x = \frac{5\pi}{4}, \frac{7\pi}{4}$

7.)  $\sqrt{3} + \cot x = 0$

$\cot x = -\sqrt{3}$   
 $\tan x = -\frac{\sqrt{3}}{3}$  OR  $-\frac{1}{\sqrt{3}}$   
 $x = \frac{5\pi}{6}, \frac{11\pi}{6}$

8.)  $15\sin x + 19 = 14\sin x + 18$

$\sin x = -1$   
 $x = \frac{3\pi}{2}$

9.)  $2\cos^2 x = 1$

$\cos^2 x = \frac{1}{2}$   
 $\cos x = \pm \frac{1}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2}$   
 $x = \frac{\pi}{4}, \frac{7\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}$

10.)  $2\cos^2 x + 3\cos x + 1 = 0$

$(2\cos x + 1)(\cos x + 1) = 0$   
 $\cos x = -\frac{1}{2}$  }  $\cos x = -1$   
 $x = \frac{2\pi}{3}, \frac{4\pi}{3}$  }  $x = \pi$

$2x^2 + 3x + 1 = 0$   
 $x^2 + 3x + 2 = 0$   
 $(x+1)(x+2) = 0$   
 $(2x+1)(x+1) = 0$

11.)  $4\sin^2 x - 8\cos x + 1 = 0$

$4(1 - \cos^2 x) - 8\cos x + 1 = 0$   
 $4 - 4\cos^2 x - 8\cos x + 1 = 0$   
 $-(4\cos^2 x + 8\cos x - 5) = 0$   
 $-(2\cos x + 5)(2\cos x - 1) = 0$   
 $\cos x = -\frac{5}{2}$  }  $\cos x = \frac{1}{2}$   
 $\emptyset$  }  $x = \frac{\pi}{3}, \frac{5\pi}{3}$

12.)  $2\sin x - \sin^2 x = 0$

$\sin x(\sin x + 2) = 0$   
 $\sin x = 0$  }  $-\sin x = -2$   
 $x = 0$  }  $\sin x = 2$   
 $\emptyset$