

PC 12 LG 11 Worksheet1 (Trig Equations)

1. Find the exact value of A if $0 \leq A < 360^\circ$

a. $\sin A = \frac{1}{2}$ b. $\sec A = -2$ c. $\cot A = -1$

d. $\tan A = \sqrt{3}$ e. $\cos A = 0$ f. $\sin A = 0$

2. Find the exact value of A if $0 \leq A < 2\pi$

a. $\cos A = \frac{-1}{2}$ b. $\csc A = -\sqrt{2}$ c. $\cot A = 1$

d. $\sec A = 1$ e. $\csc A = -2$ f. $\tan A = 0$

3. Find A to 1 decimal place if $0 \leq A < 360^\circ$

a. $\cos A = -0.7819$ b. $\csc A = -2.3451$

c. $\sec A = 6.5789$ d. $\cot A = 0.2134$

4. Find A to 2 decimal place if $0 \leq A < 2\pi$

a. $\tan A = 0.6781$ b. $\sec A = -2.4567$

c. $\csc A = 8$ d. $\cot A = -0.9145$

5. Find the exact value of A if $0 \leq A < 360^\circ$

a. $\sin^2 A = 1$ b. $\cos^2 A = \frac{1}{4}$

c. $\tan^2 A = \frac{1}{3}$ d. $\sec^2 A = 2$

e. $\csc^2 A = \frac{4}{3}$ f. $\cot^2 A = \frac{1}{3}$

6. Find the exact value of A if $0 \leq A < 2\pi$

a. $\csc^2 A = 4$ b. $\sec^2 A = \frac{4}{3}$

c. $\cot^2 A = 1$ d. $\cos^2 A = \frac{1}{2}$

e. $\sin^2 A = \frac{3}{4}$ f. $\tan^2 A = 3$

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7. Solve each of the following equations algebraically for x , $0 \leq x < 2\pi$. Give exact values where possible (otherwise to 2 dec. places). Also, solve over the set of real numbers (give the general solution).

a. $\cos^2 x - \cos x - 2 = 0$

b. $\sin^2 x - 4\sin x + 3 = 0$

c. $2\cos^2 x - \cos x = 1$

d. $2\sin^2 x + 3\sin x = 2$

e. $6\cos^2 x = \cos x + 1$

f. $12\sin^2 x = \sin x + 1$

g. $\tan^2 x + 3\tan x = -2$

Answer Key

1. a. $30^\circ, 150^\circ$ b. $120^\circ, 240^\circ$ c. $135^\circ, 315^\circ$

d. $60^\circ, 240^\circ$ e. $90^\circ, 270^\circ$ f. $0^\circ, 180^\circ$

2. a. $\frac{2\pi}{3}, \frac{4\pi}{3}$ b. $\frac{5\pi}{4}, \frac{7\pi}{4}$ c. $\frac{\pi}{4}, \frac{5\pi}{4}$

d. 0 e. $\frac{7\pi}{6}, \frac{11\pi}{6}$ f. $0, \pi$

3. a. $141.4^\circ, 218.6^\circ$ b. $205.2^\circ, 334.8^\circ$

c. $81.3^\circ, 278.7^\circ$ d. $78.0^\circ, 258.0^\circ$

4. a. $0.60, 3.74$ b. $1.99, 4.29$

c. $0.13, 3.02$ d. $2.31, 5.45$

5. a. $90^\circ, 270^\circ$ b. $60^\circ, 120^\circ$
 $240^\circ, 300^\circ$

c. $30^\circ, 150^\circ$ d. $45^\circ, 135^\circ$
 $210^\circ, 330^\circ$ $225^\circ, 315^\circ$

e. $60^\circ, 120^\circ$ f. $60^\circ, 120^\circ$
 $240^\circ, 300^\circ$ $240^\circ, 300^\circ$

6. a. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$ b. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

c. $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$ d. $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

e. $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ f. $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

7. a. $\pi (+2n\pi, n \in I)$

b. $\frac{\pi}{2} (+2n\pi, n \in I)$

c. $0, \frac{2\pi}{3}, \frac{4\pi}{3} (+2n\pi, n \in I)$

d. $\frac{\pi}{6}, \frac{5\pi}{6} (+2n\pi, n \in I)$

e. $1.91, 4.37, \frac{\pi}{3}, \frac{5\pi}{3} (+2n\pi, n \in I)$

f. $0.34, 2.80, 3.39, 6.03 (+2n\pi, n \in I)$

g. $2.03, 5.18, \frac{3\pi}{4}, \frac{7\pi}{4} (+2n\pi, n \in I)$