Trigonometry Extra Practice

1. The coordinates of a point P on the terminal arm of an $\angle\theta$ in standard position are given, where $0^o \le \theta \le 360^o$. Determine the exact values of sin θ, cos θ, and tan θ.

a. P(4, 5) b. P(-2, 7) c. (-3, -6) d. P(7, -4)

2. Find the exact value of each trigonometric ratio.

a. $\cos 30^o$ b. $\tan 225^o$ c. $\sin 210^o$ d. $\cos 150^o$

e. $\sin 30^o$ f. $\cos 315^o$ g. $\tan 300^o$ h. $\sin 330^o$

3. Angle θ is in standard position with its terminal arm in the stated quadrant, and $0^o \le \theta \le 360^o$. Find the exact values of the other two trigonometric ratios.

a. $\sin\theta = \frac{2}{5}$, quadrant II b. $\sin\theta = -\frac{2}{5}$, quadrant III c. $\tan\theta = -\frac{5}{6}$, quadrant IV

4. If $0^o \le \theta \le 360^o$, find the possible measure of $\angle$A.

a. $\sin A = \frac{1}{2}$ b. $\cos A = \frac{1}{\sqrt{2}}$ c. $\tan A = -\sqrt{3}$ d. $\tan A = \sqrt{3}$

5. Prove each identity.

a. $\frac{1-\sin^2 x}{\cos x} = \cos x$

b. $\frac{\tan x}{\sin x} = \frac{1}{\cos x}$

c. $\frac{\sin x \cos x}{\tan x} = 1 - \sin^2 x$

d. $\cos^2 x + \frac{\sin x \cos x}{\tan x} = 2\cos^2 x$

e. $1 + \tan^2 x = \frac{1}{\cos^2 x}$

f. $\cos^2 x - \sin^2 x = 2\cos^2 x - 1$

g. $\frac{1}{\sin x} - \sin x = \frac{\cos x}{\tan x}$

h. $\frac{1-\tan^2 x}{1+\tan^2 x} = \cos^2 x - \sin^2 x$

i. $(\sin x - \cos x)(\sin x + \cos x) = 2\sin^2 x - 1$

j. $(\sin x - \cos x)^2 = 1 - 2\sin x \cos x$

k. $1 + \tan^2 x = \frac{1}{\cos^2 x}$

l. $\cos^2 x - \cos^4 x = \cos^2 x \sin^2 x$

m. $\left(1-\cos^2 x\right)\left(1+\tan^2 x\right)=\tan^2 x$

n. $\dfrac{\sin x}{1-\cos x}-\dfrac{1+\cos x}{\sin x}=0$

6. Solve each equation for $0^o \le \theta \le 360^o$.

a. $\cos x=0$

b. $2\sin x-1=0$

c. $\tan x=-1$

d. $\sqrt{2}\sin x=1$

e. $2\cos x-3=0$

f. $2\sin x+\sqrt{3}=0$

g. $\sqrt{2}\cos x+1=0$

h. $\cos x-1=0$

i. $\tan x=\sqrt{3}$

7. Solve each equation for $0^o \le \theta \le 360^o$. (TIPS)

a. $\cos^2 x-1=\sin^2 x$

b. $2\cos^2 x+3\cos x=-1$

c. $\sin^2 x+\sin x-2=0$

d. $\sin x\cos x-\sin x=0$

e. $2\sin^2 x+1=3\sin x$

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

g. $2\cos^2 x-5\cos x+3=0$

h. $2\sin^2 x-7\sin x=4$

i. $\cos^2 x+4=4\cos x$