

Problem Set 10

1. Convert $(-2, 7)$ to polar coordinates.
2. Convert $38^{\circ}06'36''$ to decimal degree measure.
3. Convert 72° to radians.
4. Find the exact value of $\cos \beta$ if we know that $\sin \beta = \frac{\sqrt{8}}{3}$ and β is not in the first quadrant.
5. Find the exact value of each of the following expressions.

(a) $\cos\left(-\frac{13\pi}{6}\right) + \sin\frac{13\pi}{4} - \cot\frac{9\pi}{2} =$

(b) $\tan 3\pi + \cos^2 9\pi - 3 \tan \frac{7\pi}{3} =$

(c) $\sin 30^{\circ} \cos 30^{\circ} \tan 30^{\circ} - \sin 60^{\circ} \cos 60^{\circ} \tan 60^{\circ} =$

6. Solve each of the following equations.

(a) $\cos x = -1$

(b) $\sin \alpha = \frac{\sqrt{3}}{2}$

(c) $\sin 2x = 1$

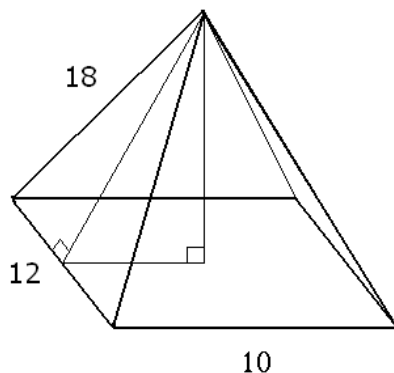
7. Prove each of the following identities.

(a) $\frac{\cos x}{1 - \sin x} - \frac{\cos x}{1 + \sin x} = 2 \tan x$

(b) $\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = 1$

(c) $\frac{1 - \sin x}{\cos x} = \frac{\cos x}{1 + \sin x}$

8. An object is traveling along a circle of radius 3 m. It completes a cycle in 100 seconds. It starts at the point $P(3, 0)$. Find the coordinates of the object after 4 minutes.
9. Find the exact value of the height of the pyramid shown on the picture.



10. A regular polygon of 12 sides is written into a circle of radius 5 ft. Find the area of the polygon.