

## Worksheet

Find without a calculator

1.  $\cos 3\pi$

2.  $\cos \frac{11\pi}{4}$

3.  $\cos 210^\circ$

4.  $\cos 360045^\circ$

5. Find the smallest positive numbers such that  $\cos \theta = 0$

6. Given  $\theta \in [0, \frac{\pi}{2}]$ ,  $\cos \theta = \frac{2}{5}$ , evaluate  $\sin \theta$

7. Find the smallest number  $x$  such that  $\sin(e^x) = 0$

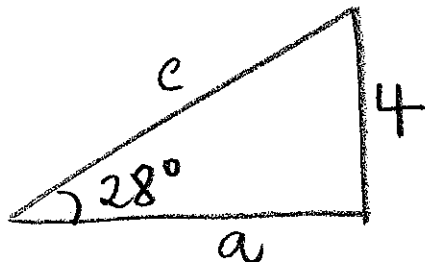
8. Find\* 4 smallest positive numbers  $\theta$  such that  $\tan \theta = 1$

9. Suppose  $0 < \theta < \frac{\pi}{2}$  and  $\sin \theta = \frac{1}{4}$ .  
Evaluate

(a)  $\cos \theta$       (b)  $\tan \theta$

10. Given that  $\cos 15^\circ = \frac{\sqrt{2+\sqrt{3}}}{2}$   
find  $\sin(15^\circ)$

11. Find the length of the other 2 sides of this triangle



12. Suppose that a 25-foot ladder is leaning against a wall, making a  $63^\circ$  angle with the ground. How high up the wall is the end of the ladder?

## Answers

1.  $\cos 3\pi = -1$

2.  $\cos \frac{11\pi}{4} = -\frac{\sqrt{2}}{2}$

3.  $\cos(210^\circ) = -\frac{1}{2}$

4. Since  $360045^\circ = 360000^\circ + 45^\circ$   
 $= 360 \times 1000^\circ + 45^\circ$

We have 1000 rotations and we add  $45^\circ$

Thus

$$\cos(360045^\circ) = \frac{\sqrt{2}}{2}$$

5.  $\frac{\pi}{2}$

6.  $\sin \theta = \frac{\sqrt{21}}{5}$

7.  $\ln \pi$

8.  $\frac{\pi}{4}, \frac{5\pi}{4}, \frac{9\pi}{4}, \frac{13\pi}{4}$

9. See example in class

10.  $\frac{\sqrt{2-\sqrt{3}}}{2}$

11.  $C \approx 8.52, a = 1.52$

12. 22 feet or about 3 inches.