

7.5 part 1

Friday, January 27, 2017 9:05 AM

A large area of blue horizontal lines for writing, with a vertical red margin line on the left side.

6.4 Solving basic trig equations over a domain

Place checkmarks in the boxes if the statement is true, based on the rotation angle θ .

	cosine			sine			tangent		
	positive	negative	zero	positive	negative	zero	positive	negative	zero
θ is acute	✓			✓			✓		
θ in Quad IV	✓				✓			✓	
On x-axis	✓	✓				✓			✓
θ in Quad III		✓			✓		✓		
On y-axis			✓	✓	✓				
$90^\circ < \theta < 180^\circ$		✓		✓				✓	

Calculator allowed: Find two rotations in the interval $0^\circ < \theta < 360^\circ$ that make each equation true. Sketch the two rotations. Mark each angle with an arc and its measure.

1. $\sin \theta = 0.87$
 $\beta = \sin^{-1}(0.87)$
 $= 60^\circ$
 $\theta = 60^\circ, 120^\circ$

2. $\cos \theta = 0.17$
 $\beta = \cos^{-1}(0.17)$
 $= 80^\circ$
 $\theta = 80^\circ, 280^\circ$

3. $\cos \theta = -0.77$
 $\beta = \cos^{-1}(0.77)$
 $= 40^\circ$
 $\theta = 140^\circ, 220^\circ$

4. $\sin \theta = -0.94$
 $\beta = \sin^{-1}(0.94)$
 $= 70^\circ$
 $\theta = 250^\circ, 290^\circ$

No calculator for the rest!

Solve the following equations for θ over the interval $0^\circ \leq \theta \leq 360^\circ$.

5. $2 \sin \theta - 1 = 0$
 $2 \sin \theta = 1$
 $\sin \theta = \frac{1}{2}$
 $\beta = 30^\circ$
 $\theta = 30^\circ, 150^\circ$

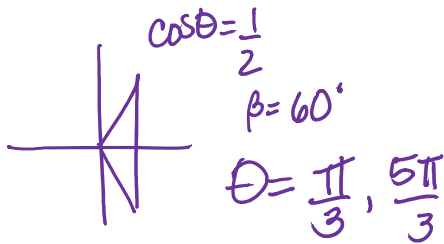
6. $1 + 2 \cos \theta = 0$
 $\cos \theta = -\frac{1}{2}$
 $\beta = 60^\circ$
 $\theta = 120^\circ, 240^\circ$

7. $4 \tan \theta - 4 = 0$
 $\tan \theta = 1$
 $\beta = 45^\circ$
 $\theta = 45^\circ, 225^\circ$

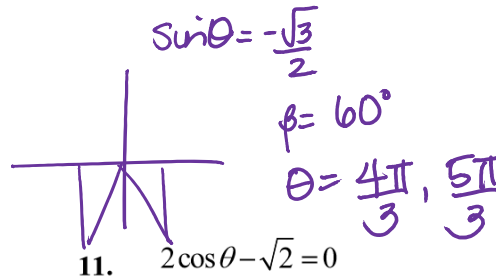
Solve the following equations for θ over the interval $0 \leq \theta \leq 2\pi$.

$[0, 2\pi]$

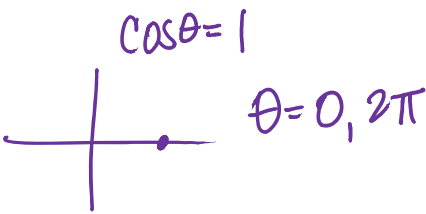
8. $2\cos\theta - 1 = 0$



9. $\sqrt{3} + 2\sin\theta = 0$



10. $4\cos\theta - 4 = 0$



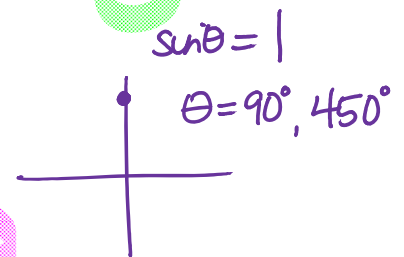
11. $2\cos\theta - \sqrt{2} = 0$

Solve the following equations for θ over the interval $0^\circ \leq \theta \leq 720^\circ$.

12. $2\sin\theta - \sqrt{3} = 0$

13. $2\cos\theta + \sqrt{2} = 0$

14. $\csc\theta = 1$

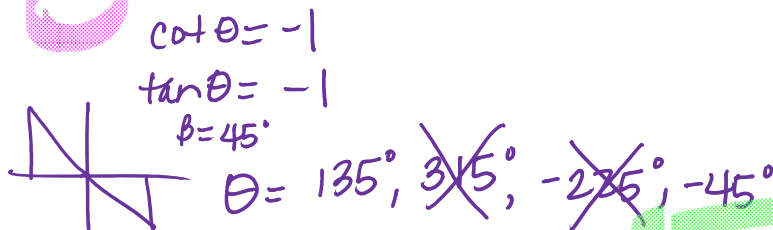


Solve the following equations for θ over the interval $-180^\circ \leq \theta \leq 180^\circ$.

15. $5\cot\theta = -5$

16. $-2\sin\theta = \sqrt{2}$

17. $2\cos\theta - \sqrt{3} = 0$



Solve the following equations for θ over the interval $0 \leq \theta \leq 4\pi$.

18. $\sin\theta = 0$

19. $2\cos\theta + \sqrt{3} = 0$

