7.5 part 1

Friday, January 27, 2017 9:05 AM

Algebra 2 H **Name:**

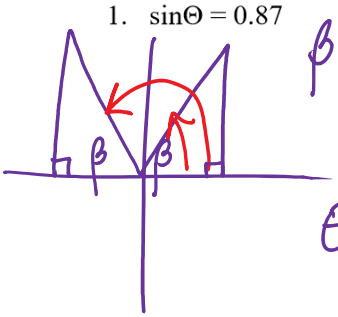
6.4 Solving basic trig equations over a domain

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			✓	✓	✓				
$90° < \theta < 180°$		✓		✓				✓	

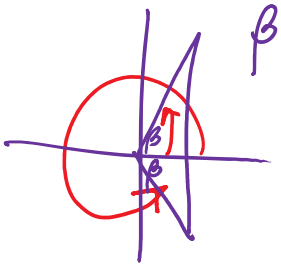
Calculator allowed: Find two rotations in the interval $0° \le \theta \le 360°$ that make each equation true. Sketch the two rotations. Mark each angle with an arc and its measure.

1. $\sin\Theta = 0.87$



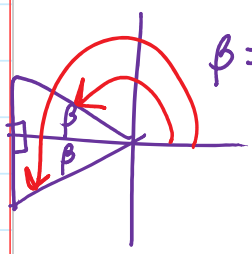
$\beta = \sin^{-1}(0.87)$
$= 60°$
$\Theta = 60°, 120°$

2. $\cos\theta = 0.17$



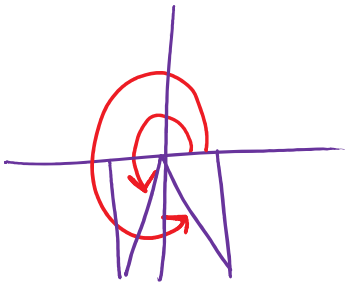
$\beta = \cos^{-1}(0.17)$
$= 80°$
$\Theta = 80°, 280°$

3. $\cos\theta = -0.77$



$\beta = \cos^{-1}(0.77)$
$= 40°$
$\Theta = 140°, 220°$

4. $\sin\theta = -0.94$



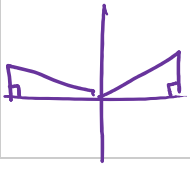
$\beta = \sin^{-1}(0.94)$
$= 70°$
$\Theta = 250°, 290°$

No calculator for the rest!

Solve the following equations for θ over the interval $0° \le \theta \le 360°$.

5. $2\sin\theta - 1 = 0$

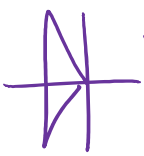
$2\sin\theta = 1$
$\sin\theta = \frac{1}{2}$



$\beta = 30°$
$\Theta = 30°, 150°$

6. $1 + 2\cos\theta = 0$

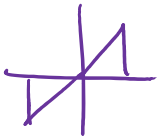
$\cos\theta = -\frac{1}{2}$



$\beta = 60°$
$\Theta = 120°, 240°$

7. $4\tan\theta - 4 = 0$

$\tan\theta = 1$



$\beta = 45°$
$\Theta = 45°, 225°$

Solve the following equations for θ over the interval $0 \le \theta \le 2\pi$. $[0, 2\pi]$

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

$\cos\theta = \frac{1}{2}$

$\beta = 60°$

$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$

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

$\sin\theta = -\frac{\sqrt{3}}{2}$

$\beta = 60°$

$\theta = \frac{4\pi}{3}, \frac{5\pi}{3}$

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

$\cos\theta = 1$

$\theta = 0, 2\pi$

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

Solve the following equations for θ over the interval $0° \le \theta \le 720°$.

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

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

14. $\csc\theta = 1$

$\sin\theta = 1$

$\theta = 90°, 450°$

Solve the following equations for θ over the interval $-180° \le \theta \le 180°$.

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

$\cot\theta = -1$

$\tan\theta = -1$

$\beta = 45°$

$\theta = 135°, 315°, -225°, -45°$

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

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

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

18. $\sin\theta = 0$

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

$\cos\theta = -\frac{\sqrt{3}}{2}$

$\beta = \frac{\pi}{6}$

$\theta = \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{17\pi}{6}, \frac{19\pi}{6}$