






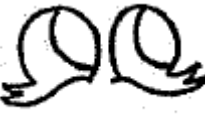


Trigonometric Equations

Name: _____

Find the solutions to each equation in the interval $[0, \infty)$.

<p>1. $2\sin\theta + 3 = 2$</p>	<p>2. $1 - \cos\theta = \frac{1}{2}$</p>		
<p>a) $\theta = \frac{7\pi}{6}, \frac{11\pi}{6}$ Draw this bow and feather on the top of the circle:</p>		<p>a) $\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$ Draw this body and egg shell under the circle:</p>	
<p>b) $\theta = \frac{11\pi}{6}$ Draw this bow and feather on the top of the circle:</p>		<p>b) $\theta = \frac{\pi}{3}, \frac{5\pi}{3}$ Draw this body and egg shell under the circle:</p>	
<p>3. $4\cos^2\theta = 1$</p>		<p>4. $\tan^2\theta = \frac{1}{3}$</p>	
<p>a) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ Draw these wings:</p>		<p>a) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ Draw these eyes:</p>	
<p>b) $\theta = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$ Draw these wings:</p>		<p>b) $\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$ Draw these eyes:</p>	

5. $\sin(3\theta) = -1$

6. $\tan\left(\frac{\theta}{2}\right) = \sqrt{3}$

a) $\theta = \frac{\pi}{2}, \frac{3\pi}{2}$



Draw this beak:

a) $\theta = \frac{2\pi}{3}$



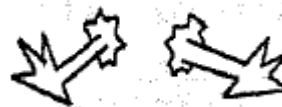
Draw these legs:

b) $\theta = \frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$



Draw this beak:

b) $\theta = \frac{2\pi}{3}, \frac{8\pi}{3}$



Draw these legs:

7. $\cos(2\theta) = -\frac{1}{2}$

8. $\sqrt{3} \cot \theta + 1 = 0$

a) $\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$

Draw this insect in the background:



a) $\theta = \frac{5\pi}{6}, \frac{11\pi}{6}$

Draw this insect in the background:



b) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$



Draw this insect in the background:



b) $\theta = \frac{2\pi}{3}, \frac{5\pi}{3}$

Draw this insect in the background:



9. $5\csc\theta - 3 = 2$		10. $2\sin^2\theta - 3\sin\theta + 1 = 0$	
a) $\theta = \frac{\pi}{2}$ Draw these flowers in the background:		a) $\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{\pi}{2}$	Color beak orange.
b) $\theta = 0$ Draw these flowers in the background:		b) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{\pi}{2}$	Color beak red.
11. $\cos\left(2\theta - \frac{\pi}{2}\right) = -1$		12. $3\cos\theta + 3 = 2\sin^2\theta$	
a) $\theta = \pi, \frac{3\pi}{4}$	Color the bow purple.	a) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \pi$	Color face, head, feathers, wings, & body orange.
b) $\theta = \frac{3\pi}{4}, \frac{7\pi}{4}$	Color the bow red.	b) $\theta = \frac{2\pi}{3}, \frac{4\pi}{3}, \pi$	Color face, head, feathers, wings, & body yellow.

13. $\cos(2\theta) + 3 = 5 \cos \theta$		14. $\sin^2 \theta - 1 = 0$	
a) $\theta = \frac{\pi}{3}, \frac{5\pi}{3}$	Color the eyes light blue.	a) $\theta = \frac{\pi}{2}, \frac{3\pi}{2}$	Color the legs orange.
b) $\theta = \frac{\pi}{3}$	Color the eyes black.	b) $\theta = 0, \pi$	Color the legs brown.
15. $\sin^2 \theta = 6(\cos \theta + 1)$		16. $\csc^2 \theta = \cot \theta + 1$	
a) $\theta = \pi$	Outline the eggshell in black.	a) $\theta = 0, \frac{\pi}{4}, \frac{5\pi}{4}, \pi$	Color the flower stems yellow and leaves green.
b) <i>No Solution</i>	Outline the eggshell in blue.	b) $\theta = \frac{\pi}{4}, \frac{\pi}{2}, \frac{5\pi}{4}, \frac{3\pi}{2}$	Color BOTH the flower stems and leaves green.

17. $\sin \theta + \cos \theta = \sqrt{2}$		18. $(\cot \theta + 1)(\csc \theta - 2) = 0$	
a) $\theta = \frac{\pi}{4}$	Color the flowers purple and yellow.	a) $\theta = \frac{3\pi}{4}, \frac{7\pi}{4}, \frac{\pi}{6}, \frac{5\pi}{6}$	Color the insect from #7 red with black.
b) $\theta = \frac{\pi}{4}, \frac{5\pi}{4}$	Color the flowers red and blue.	b) $\theta = \frac{\pi}{4}, \frac{7\pi}{4}, \frac{\pi}{6}, \frac{7\pi}{6}$	Color the insect from #7 purple with yellow.
19. $\sin(2\theta) = \cos \theta$		20. $\cos(2\theta) + 6\sin^2 \theta = 4$	
a) $\theta = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$	Color the insect from #8 blue and yellow.	a) $\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$	Color back-ground light green.
b) $\theta = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6}$	Color the insect from #8 red and purple.	b) $\theta = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$	Color back-ground light blue.