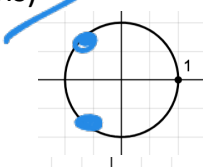
Introduction to Trigonometric Equations Worksheet.

Solve the following equations for the given restriction on t. (If no restriction is given, find all solutions)

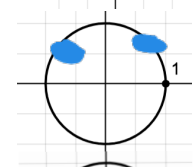
(1) Solve: $\cos(t) = -\frac{1}{2}$

$t = \frac{2\pi}{3} + 2\pi k, \frac{4\pi}{3} + 2\pi k$ → k integers



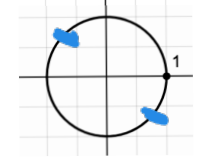
(2) Solve: $\sin(t) = \frac{\sqrt{2}}{2}$ for $0 \le t < 2\pi$

$t = \pi/4, 3\pi/4$



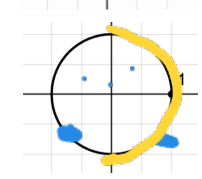
(3) Solve: $\tan(t) = -1$

$t = \frac{3\pi}{4} + \pi k$, k integers



(4) Solve: $\sin(t) = -\frac{1}{2}$ for $-\frac{\pi}{2} \le t < \frac{\pi}{2}$

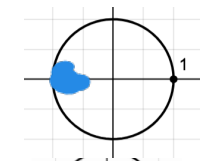
$t = \frac{-\pi}{6}$



(5) Solve: $\sec(t) = -1 \quad 0 \le t < 2\pi$

$\cos(t) = -1$

$t = \pi$



(6) Solve: $\csc(t) = -2$ for $0 \le t < 2\pi$

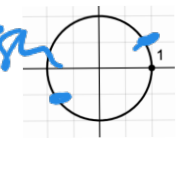
$\sin(t) = -\frac{1}{2}$

$t = \frac{7\pi}{6}, \frac{11\pi}{6}$

(7) Solve: $\cot(t) = \sqrt{3}$

$\tan(t) = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$t = \frac{\pi}{6} + \pi k$, k integers



(8) Solve: $\tan(t) = 0 \quad 0 \le t < 2\pi$

$t = 0, \pi$