2. (5 Points.) For certain initial conditions, the displacement $x(t)$ of a mass from equilibrium in a mechanical system without any damping or forcing is given by

$$x(t) = -\sqrt{3}\cos(4\pi t) + \sin(4\pi t).$$

Write $x(t)$ in phase/amplitude form and use your answer to find the *second* positive time $t > 0$ at which the mass passes equilibrium. Note that for some angles in the first quadrant we have

θ	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\sin(\theta)$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1