

I. Solve each trigonometric equation. Keep answer(s) in degrees where $0^\circ \leq x < 360^\circ$. Show work!!

1.) $2 \cos x - \sqrt{3} = 0$	2.) $2 \sin x + 1 = 4 \sin x$	3.) $\tan x + \sqrt{3} = 0$
4.) $(\tan x - 1)(\cos x + 2) = 0$	5.) $4 \sin\left(\frac{x}{5}\right) - 4 = 0$	6.) $3 \tan 3x - \sqrt{3} = 0$
7.) $2 \cos\left(\frac{3x}{5}\right) + \sqrt{2} = 0$	8.) $\sin x(1 - \sin x) = 0$	9.) $3 \cos x + 8 = 3 - 2 \cos x$
10.) $2 \sin(2x + 30^\circ) = 1$	11.) $(2 \sin x + 1)(\sqrt{3} + 3 \tan x) = 0$	12.) $\frac{1}{\cos x} = -\frac{2}{\sqrt{3}}$
13.) $\cos x(\cos x + 1)(\sqrt{3} \tan x - 1) = 0$	14.) $\frac{1}{2 \sin x - 3} = \frac{2}{3 \sin x}$	15.) $4 \sin^2 x - 3 = 0$

II. Complete each application problem involving a trigonometric equation. Show work!!

<p>16.) A Mercator project map uses a flat projection of Earth in which the distance between the lines of latitude increases with their distance from the equator. The calculation of the location of a point on this projection P uses the formula $P = \tan\left(\theta + \frac{L}{2}\right)$, where L is the latitude of the point. What is the measure of angle θ if the latitude of a point is 60° and the location of the point is 3.73?</p>	<p>17.) Rhonda wants to wait to plant her flowers until there at least 12 hours of daylight. The number of daylight H in her town can be represented by $H = 11.45 + 6.5 \sin(0.0168d - 1.333)$, where d is the day of the year and <u>angle measures are in radians</u>. On what day is it safe for Rhonda to plant her flowers?</p>	<p>18.) A ball on a spring is pulled 4 inches below its rest position and then released. After t seconds, the ball's distance from its rest position is given by $d = -4 \cos(60^\circ t)$. What are all the values of t for which the ball is 3 inches above its rest position?</p>
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