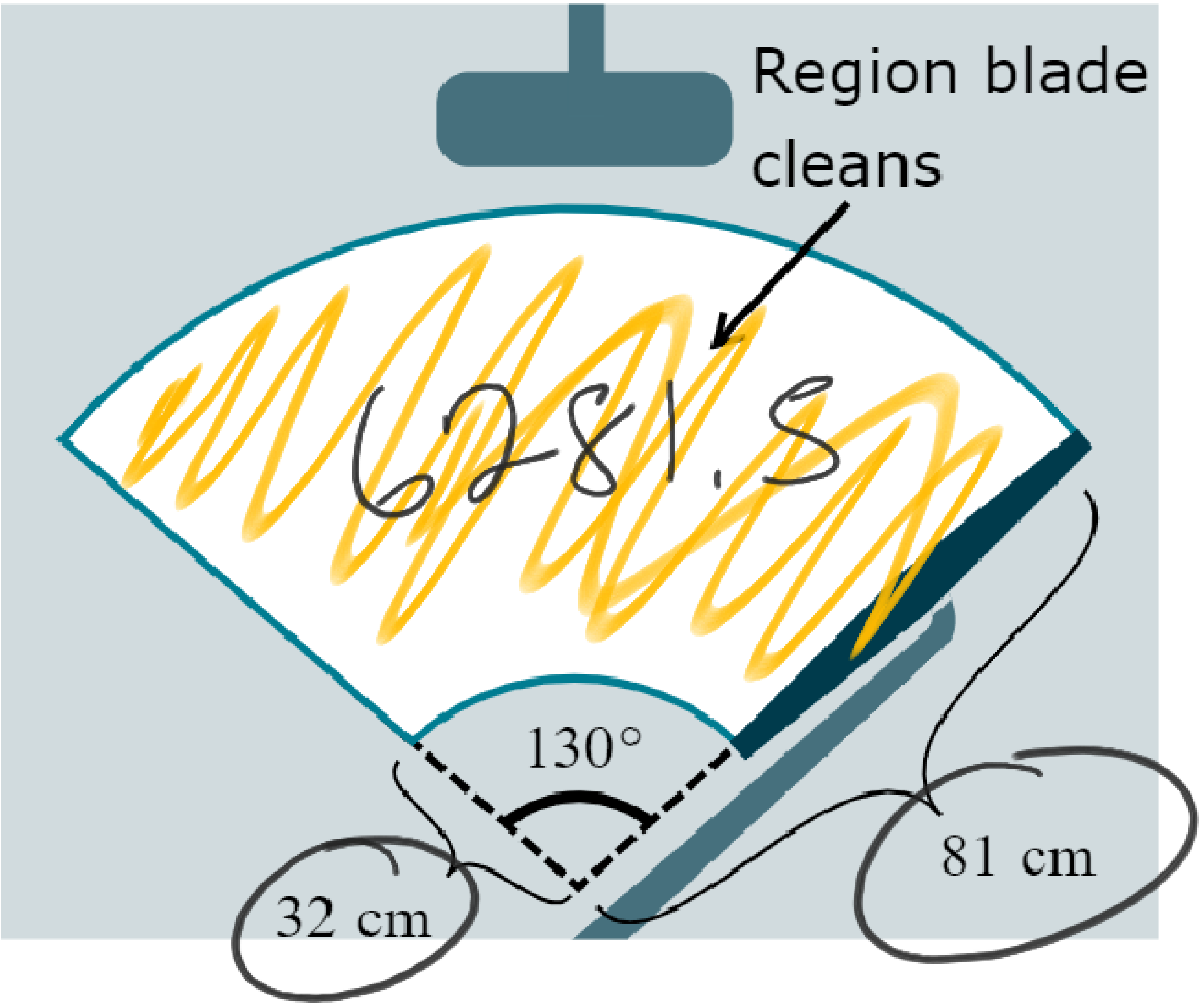


$$130 \times \frac{\pi}{180}$$

$$A = \frac{1}{2} r^2 \theta$$

$$A = \frac{1}{2}(81)^2\left(\frac{130\pi}{180}\right)$$

$$A = 7443.2 \quad W$$

$$A = \frac{1}{2}(32)^2\left(\frac{130\pi}{180}\right)$$

$$A = 1161.7 \quad M$$

If $\theta = 135°$, find the exact value of each expression below.

(a) $\cos(-\theta) =$ $-\frac{\sqrt{2}}{2}$

(b) $\cos^2\theta =$ $1/2$

(c) $\cos 2\theta =$ 0

$\theta = 135$

$ref = 45°$

$\cos 45° = \frac{\sqrt{2}}{2}$

$\cos^2\theta$

$(\cos\theta)^2$

$\cos 135 = \left(-\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} = \frac{1}{2}$

c) $\cos(270)$

$$\tan 960^\circ = \square \ \sqrt{3}$$

$$\csc\left(-\frac{5\pi}{4}\right) = \square$$

$960 - 360 = 600 - 360$

$\tan(240)$

$$\frac{\sin(60)}{\cos(60)}$$

$$\frac{\sqrt{3}/2}{1/2} = \sqrt{3}$$

$\tan 960^\circ \quad = \boxed{}\ \sqrt{3}$

$\csc\left(-\frac{5\pi}{4}\right) \quad = \boxed{}$

$\frac{2\sqrt{2}}{\sqrt{2}\sqrt{2}} = \cancel{\frac{2\sqrt{2}}{2}}$

$\csc\left(-\frac{5\pi}{4}\right)$

$-\frac{5\pi}{4} + 2\pi = \frac{3\pi}{4}$

$\csc \to \sin$

$\frac{1}{\sin(3\pi/4)} = \frac{1}{\sqrt{2}/2}$

$\frac{2}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

Find the period, amplitude, and phase shift of the function.

$$y = \underset{a}{4}\sin\boxed{\left(\pi x + \frac{\pi}{4}\right)} + 1 \qquad bx - c$$

$$\left(\pi x + \frac{\pi}{4}\right)$$

$$\underset{b}{\pi}\left(x + \underset{\text{Phase shift}}{\frac{1}{4}}\right)$$

Give the exact values, not decimal approximations.

Period: 2

Amplitude: 4

Phase shift: $-1/4$

π

$$\text{Period} = \frac{2\pi}{b} = 2$$

Find the amplitude, phase shift, and period of the function.

$$y = -2\sin\left(3x + \frac{\pi}{2}\right) - 1$$

vertical shift

Give the exact values, not decimal approximations.

Amplitude: 2

Phase shift: $-\frac{\pi}{6}$

Period: $\frac{2\pi}{3}$

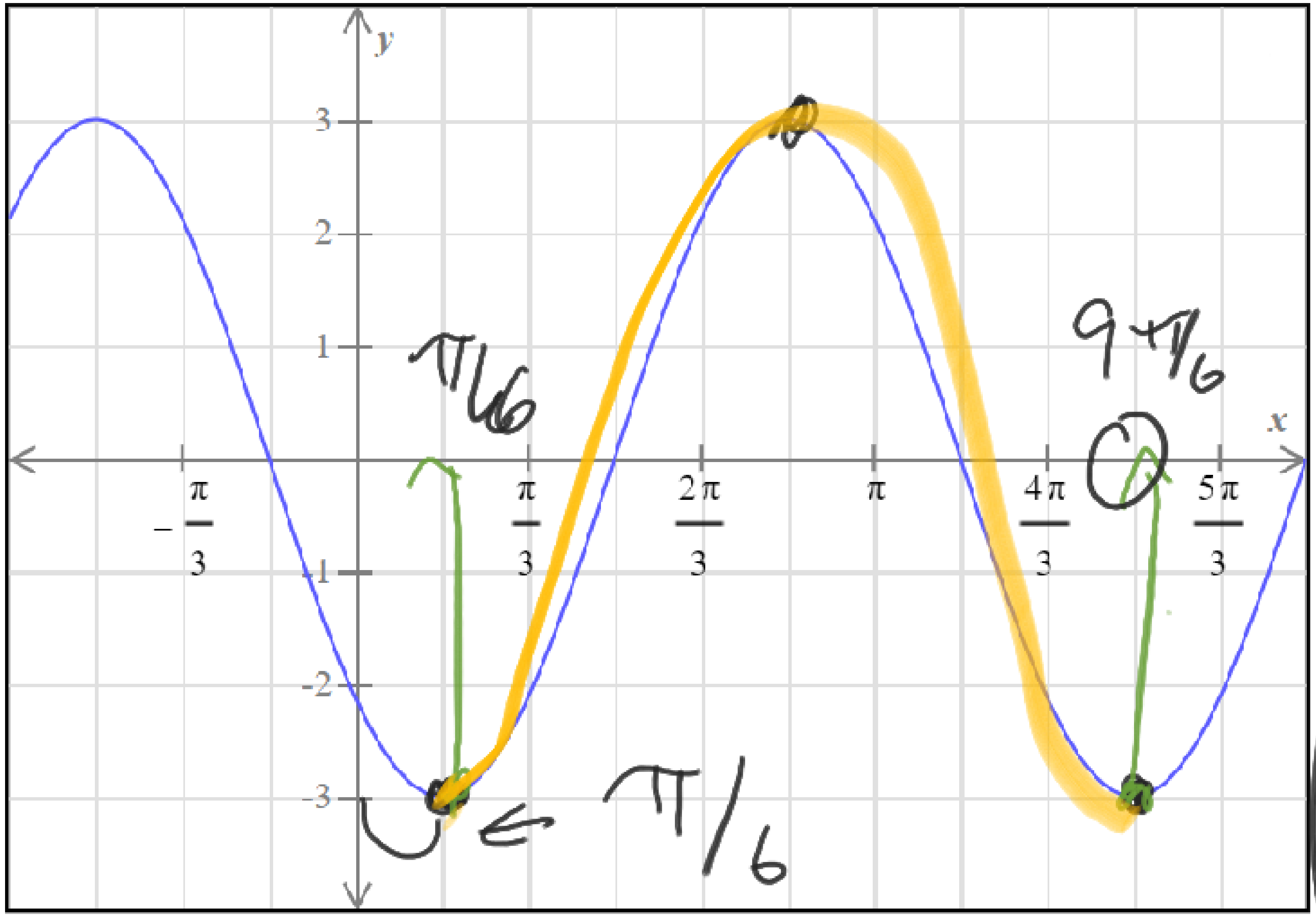
π

$3x + \frac{\pi}{2}$

$3\left(x + \frac{\pi}{6}\right)$

π or $-\frac{\pi}{6}$

Period $= \frac{2\pi}{3}$ $\frac{2}{3}4\pi$



$$a\cos(b(x-c))+d$$

$d \downarrow 0$

$$-3\cos\left(\tfrac{3}{2}(x-c)\right)$$

$$\boxed{-3\cos\left(\tfrac{3}{2}(x-\pi/6)\right)}$$

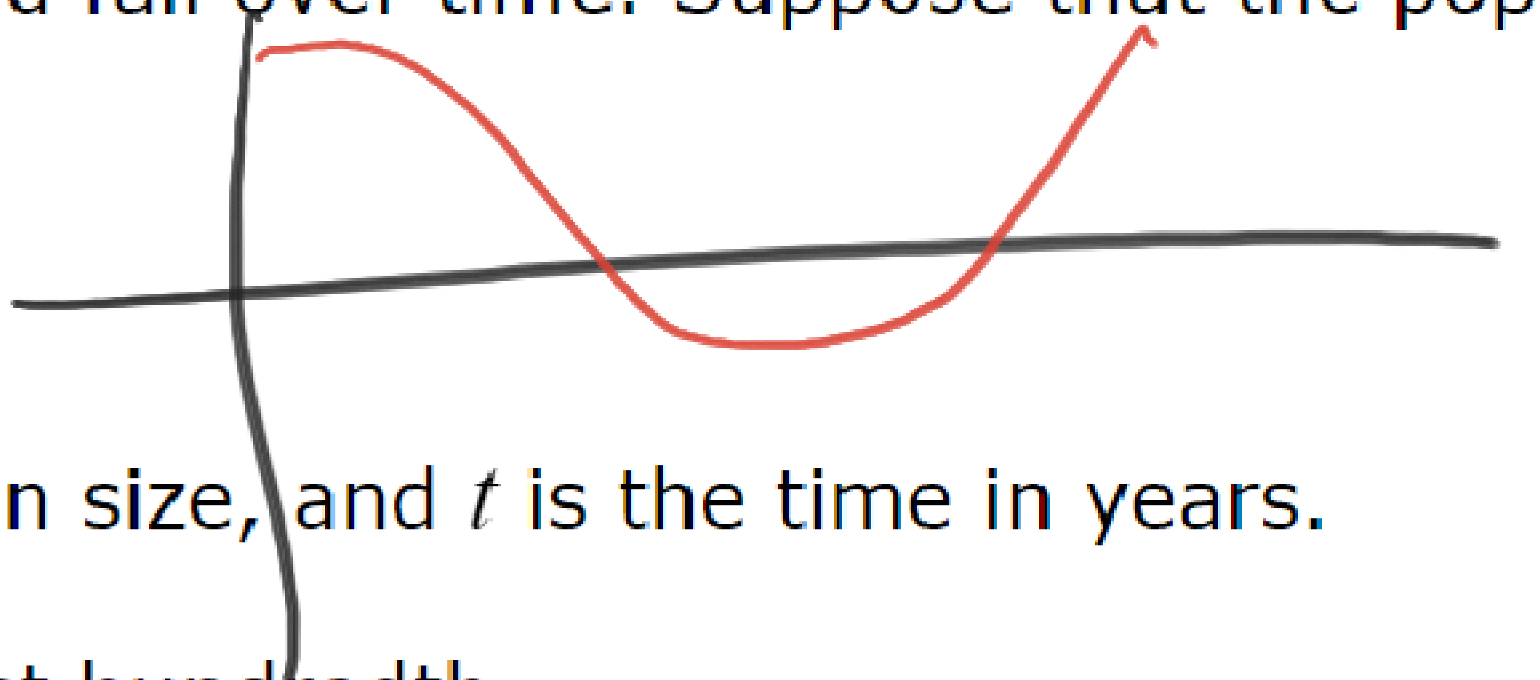
$$\frac{9\pi}{6}-\frac{\pi}{6}$$

period: $\frac{8\pi}{6}=\frac{2\pi}{b}=b=\frac{3}{2}$

$$8\pi b=12\pi$$

The population sizes of many animal species rise and fall over time. Suppose that the popul
function.

$$p(t) = \overset{d}{3050} + \overset{a}{1250} \cos 1.5t \qquad 3050$$



In this equation, $p(t)$ represents the total population size, and t is the time in years.

Find the following. If necessary, round to the nearest hundredth.

Minimum population size: ☐ 1800

Time for one full cycle of p : ☐ years

Number of cycles of p per year: ☐

max $3050 + 1250 = 4300$

min $3050 - 1250 = 1800$

The population sizes of many animal species rise and fall over time. Suppose that the popul
function.

Period $= \frac{2\pi}{b} = \frac{2\pi}{1.5}$

$$p(t) = 3050 + 1250 \cos 1.5t$$

In this equation, $p(t)$ represents the total population size, and t is the time in years.

Find the following. If necessary, round to the nearest hundredth.

Minimum population size: ☐

Time for one full cycle of p : ☐ years 4.19

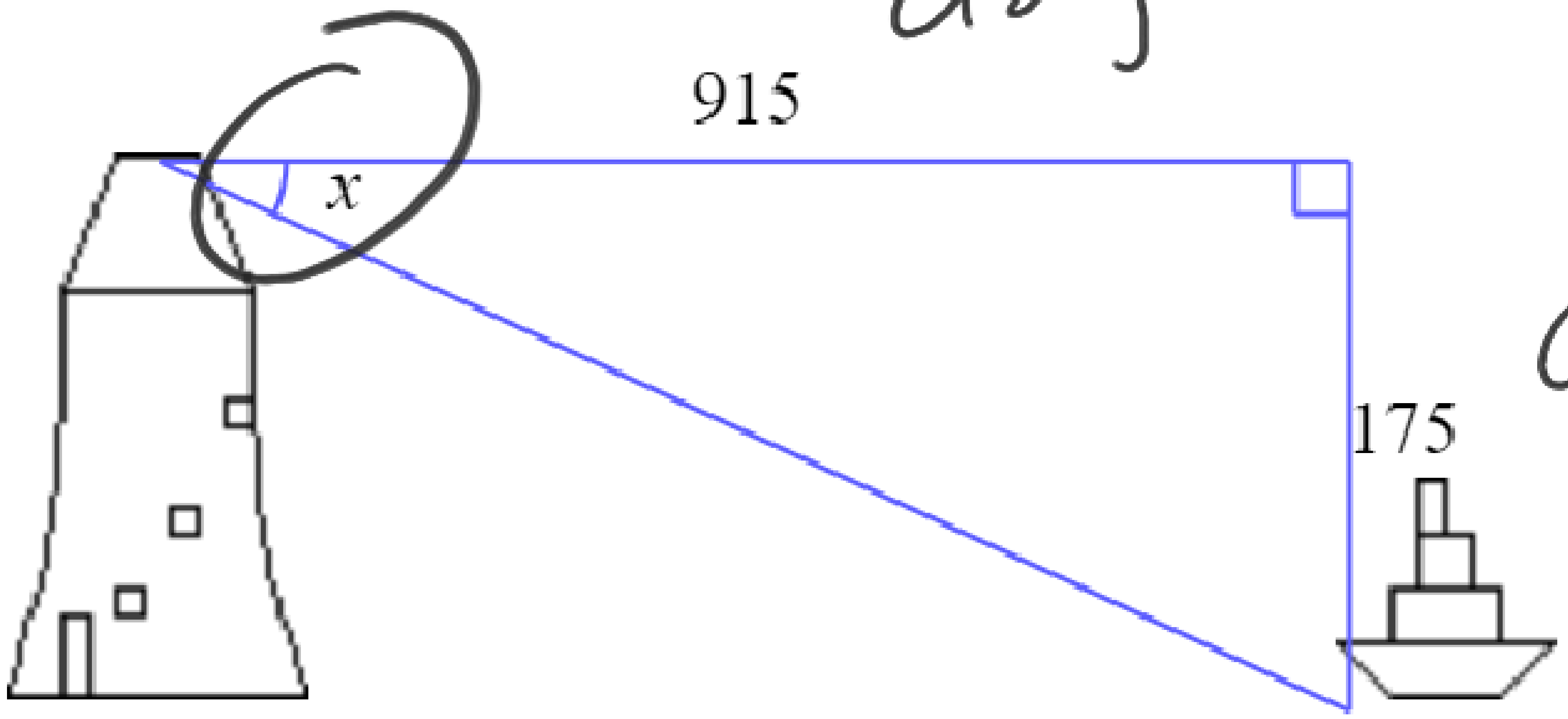
Number of cycles of p per year: ☐ 0.24

$1/4.19 = 0.24$

Graph the trigonometric function.

$$y = 2\cos\left(x - \frac{2\pi}{3}\right)$$

$x + \frac{2\pi}{3}$	x	y	$2y$
$2\pi/3$	0	1	2
$7\pi/6$	$\pi/2$	0	0
$5\pi/3$	π	-1	-2
$13\pi/6$	$3\pi/2$	0	0
$8\pi/3$	2π	1	2



adj

opp

$X = 10{,}8^\circ$

$\cancel{\tan^{-1}(\tan X)} = \tan^{-1}\left(\frac{175}{915}\right)$

X

Suppose a weight on a pendulum swings back and forth in simple harmonic motion.

The following equation describes the weight's horizontal displacement d (in centimeter
Note that rightward is the positive direction.

$$d = 35 \sin\left(\frac{5\pi}{6} t\right)$$

$\frac{6}{5\pi}X$	X	y	$35y$
0	0	0	0
$3/5$	$\frac{\pi}{2}$	1	35
$6/5$	π	0	0
$9/5$	$\frac{3\pi}{2}$	-1	-35
$12/5$	2π	0	0