

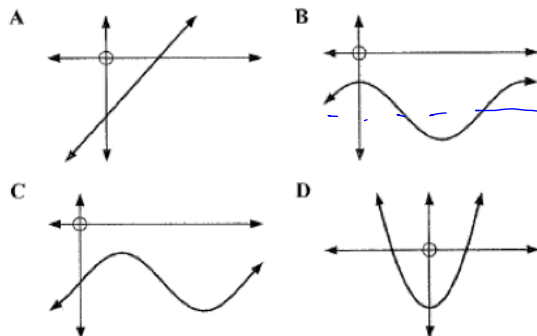
HW Tally

Pick up the Warm Up

Matching

The diagrams below are sketches of four out of the following five functions:

- a** $y = a^x$ **b** $y = \sin x - a$ **c** $y = \cos x - a$
d $y = x^2 - a$ **e** $y = x - a$



Graph	Function
A	e
B	b, c
C	b, c
D	d

$$88.8^\circ \times \frac{2\pi}{360^\circ} = \underline{1.55} \text{ radians}$$

Convert from radians to degrees.

$\frac{4\pi}{3}$ this angle is a multiple of one of the main benchmark angles $\frac{\pi}{3}$ or 60° $4 \times 60^\circ = \underline{240^\circ}$

$$\frac{4\pi}{3} \times \frac{360^\circ}{2\pi}$$

Convert from radians to degrees.

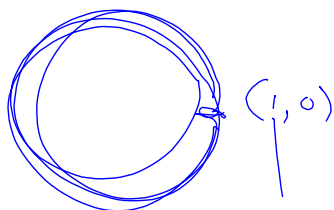
$$\frac{2\pi}{13}$$

$$\frac{2\pi}{13} \times \frac{360^\circ}{2\pi}$$

$$\frac{\cancel{2\pi}}{13} \times \frac{360^\circ}{\cancel{2\pi}} = \frac{360^\circ}{13} \approx \underline{\underline{27.69^\circ}}$$

3

$$\cos(500\pi) = 1$$



HW Questions

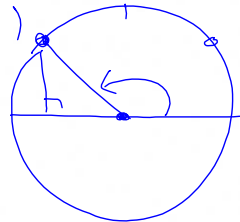
Exact Trig Values

Without a calculator, evaluate each trig function at the given angle (*I recommend you make a separate drawing for each*)

1. $\cos \frac{7\pi}{6}$

2. $\sin \frac{3\pi}{2}$

3. $\tan \frac{3\pi}{4} = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}}$

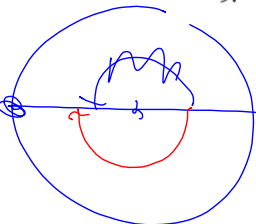
 $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$ 

$= -1$

4. $\cos \frac{-2\pi}{3}$

8. $\sin \frac{11\pi}{6}$

9. $\tan(-\pi) = \frac{\sin(-\pi)}{\cos(-\pi)}$

 $(-1, 0)$ 

$= \frac{0}{-1} = 0$

10. Without a calculator, solve for each angle(s) that makes the given equation true on the interval $[0, 2\pi]$.

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

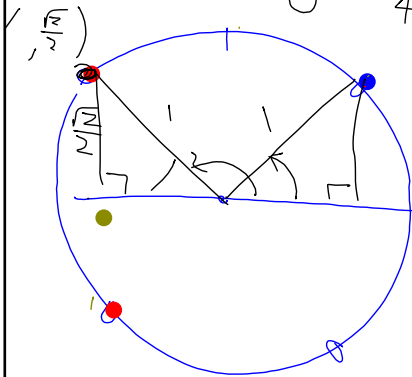
$$\theta = \frac{\pi}{4}$$

$$\theta = \frac{3\pi}{4}$$

$$\cos \theta = -\frac{\sqrt{3}}{2}$$

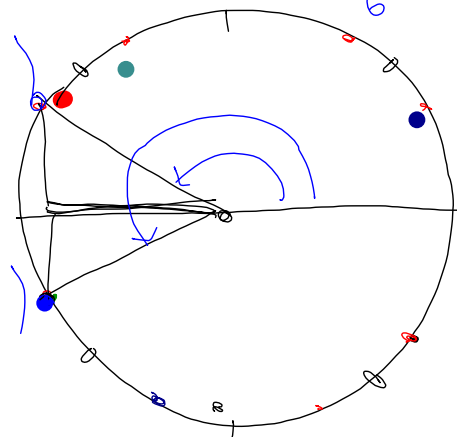
$$\theta = \frac{5\pi}{6}$$

$$\theta = \frac{7\pi}{6}$$

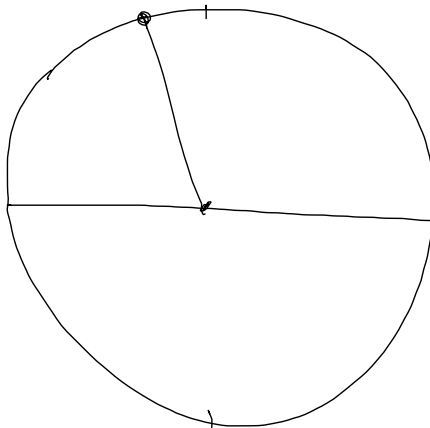


$$\left(-\frac{\sqrt{3}}{2}, \right)$$

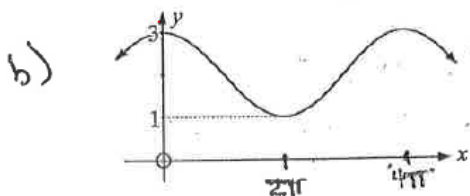
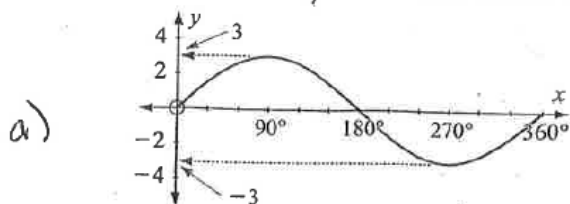
$$\left(-\frac{\sqrt{3}}{2}, \right)$$



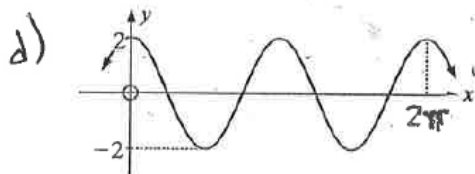
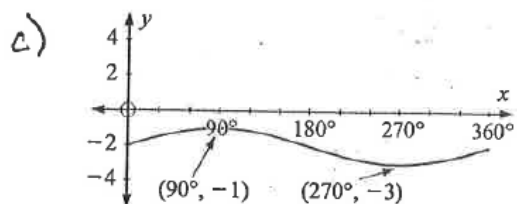
11. Draw a Unit Circle. Draw an rotation angle of around 100 degrees. Draw a line segment that represents the length of the the approximate value of $\sin(100^\circ)$. Eyeballing this segment, estimate the approximate value of $\sin(100^\circ)$ to the nearest 0.1

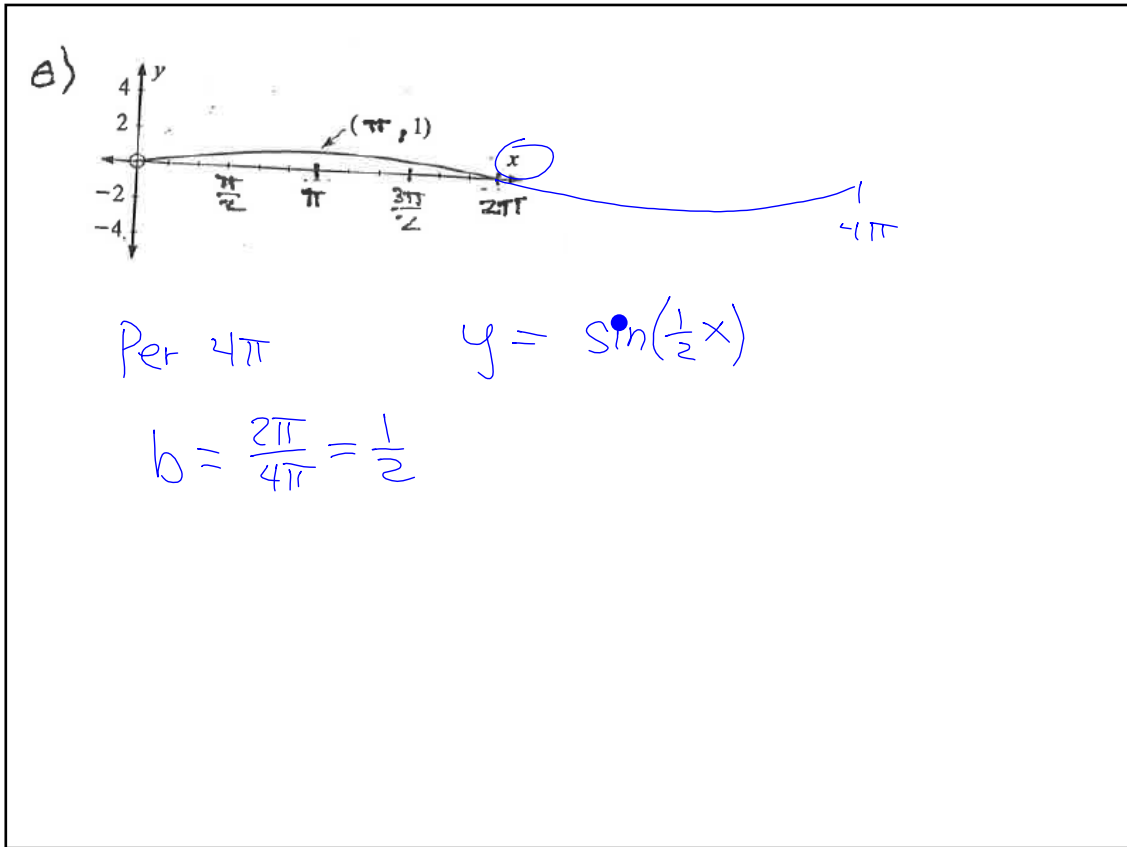


12. Determine the equation
your calculator



2





No calculator Sketching Practice

Sketch and label the following graphs

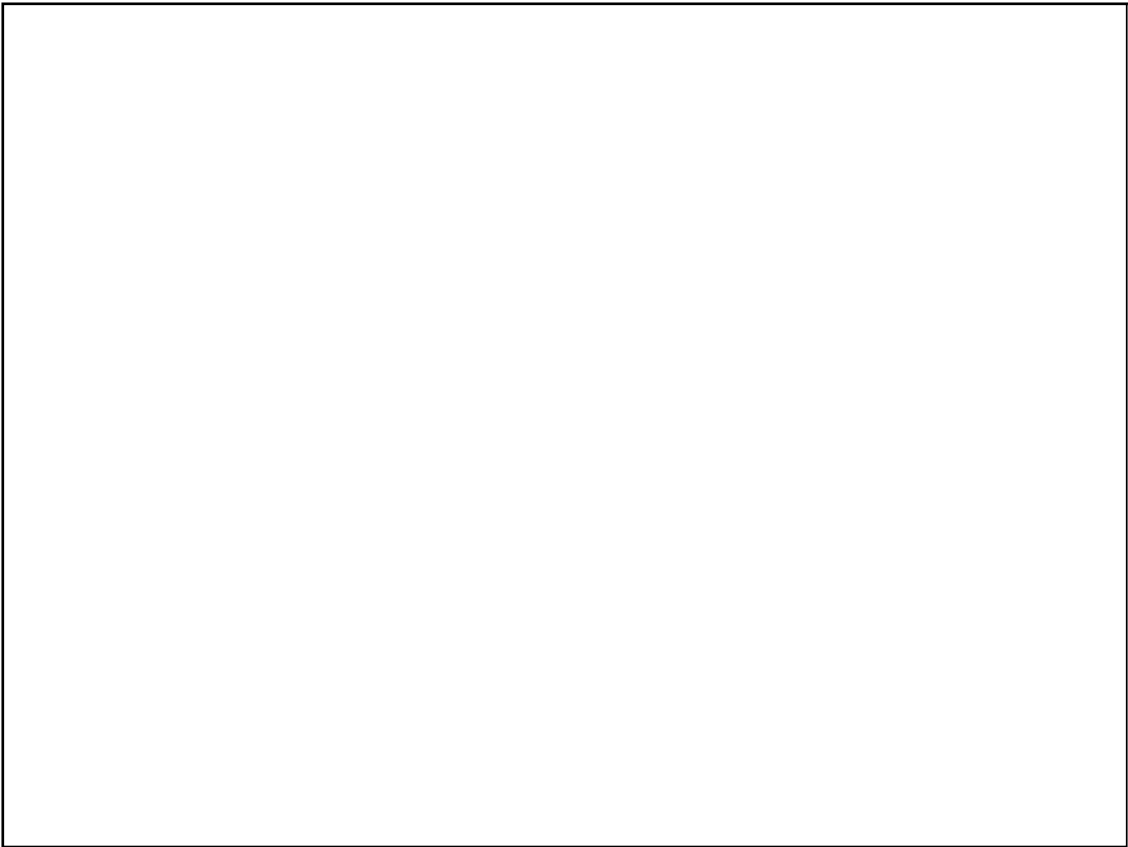
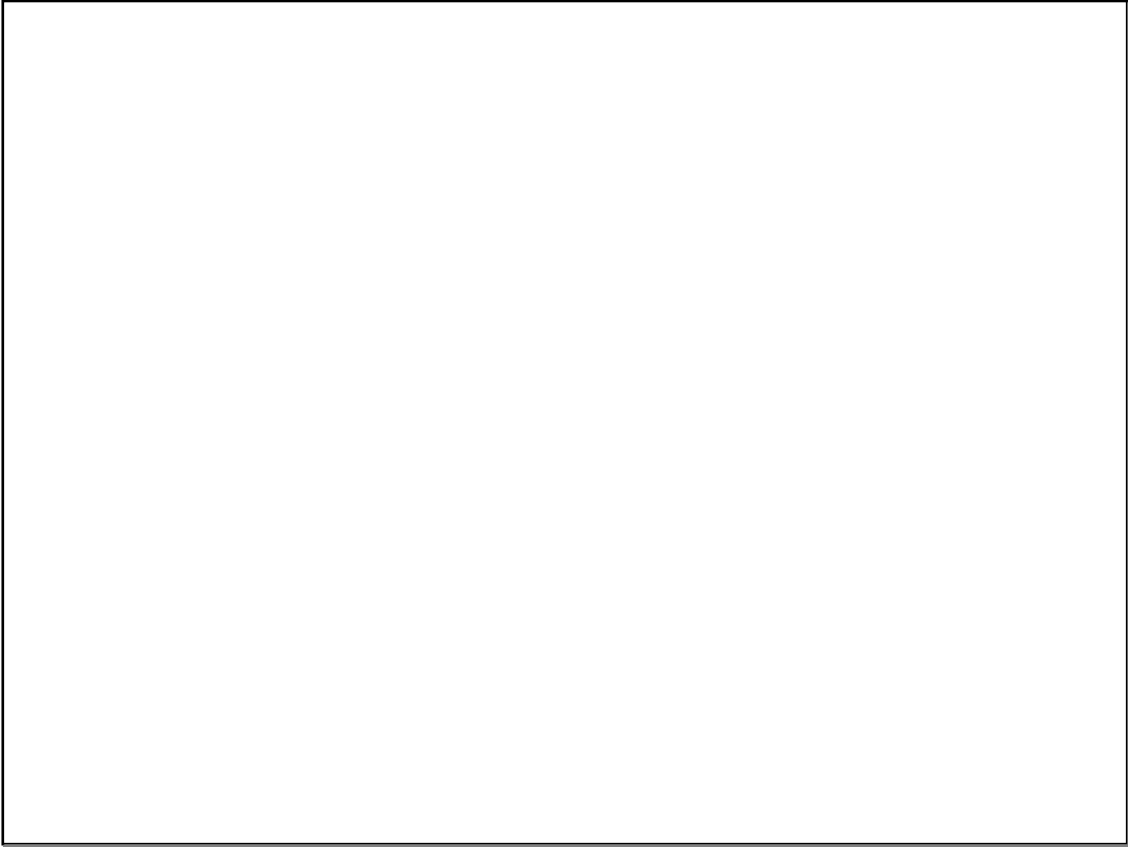
$f(\theta) = 8 \sin(2\theta)$ sketch 1 cycle, in degrees

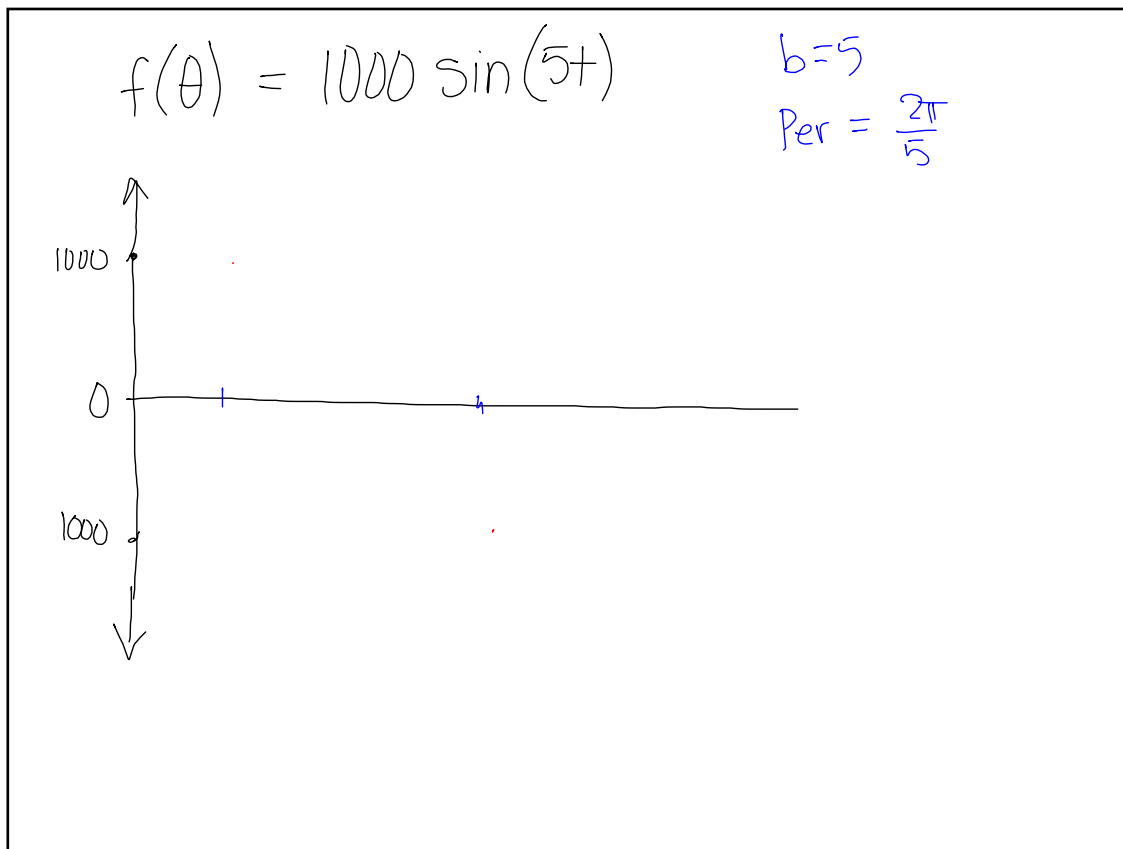
$f(x) = 15 \cos\left(\frac{x}{2}\right)$ sketch 1 cycle, in radians

$H(t) = 1000 \sin(5t) + \cancel{4000}$ sketch 1 cycle

$$f(\theta) = 8 \sin(2\theta)$$

$$f(\theta) = 15 \cos\left(\frac{x}{2}\right) \quad 15 \cos\left(\frac{1}{2}x\right)$$





Questions

HW

162

a. $-\frac{\sqrt{2}}{2}$

b. $\sqrt{3}$

c. $-\frac{1}{2}$

d. $\frac{\sqrt{2}}{2}$

e. 1

f. $-\frac{1}{\sqrt{3}}$ or $-\frac{\sqrt{3}}{3}$

g. $\frac{\pi}{4}$ or $\frac{5\pi}{4}$

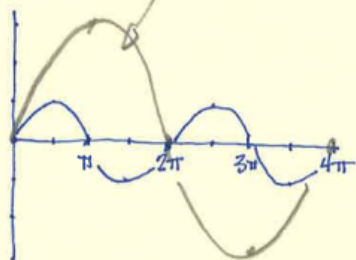
h. $\frac{3\pi}{4}$ or $\frac{7\pi}{4}$

7-114

(a) Describes $y = 3\sin(\frac{1}{2}x)$ → the amplitude is 3
The period is 4π Since $b = \frac{1}{2}$

Per = $\frac{2\pi}{\frac{1}{2}} = 4\pi$

(b)



7-146

colleen $\sin(30^\circ) = -.98803\dots$
Jolleen $\sin(30^\circ) = 0.5$

147

$$y = \sin(2x) - 1$$

$$\rightarrow y = \sin 2(x-1)$$

7-149

a) $\log(8) + \log(125)$
Use product property

$$\log(8 \cdot 125)$$

$$\log 1000$$

(b)

$$\log_{25}(125) = n$$

$$25^n = 125$$

↓

$$(5^2)^n = (5)^3$$

method 1

method 2

$$\begin{aligned} \textcircled{c} \quad & \frac{1}{2} \log(25) + \log(20) \\ & \log 25^{\frac{1}{2}} + \log(20) \\ & \log \sqrt{25} + \log(20) \\ & \log 5 + \log 20 \end{aligned}$$

$$\log 100 = x$$

$$10^x = 100$$

$$x = 2$$

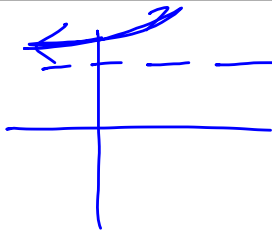
$$d) \quad 7^{\log_7(12)} = n$$

convert to log form

$$\log_7(12) = \log_7 n$$

exponent base





7-150 a

$$y = km^x + b$$

$$(3, 7.5) \quad (4, 6.25)$$

$$7.5 = k \cdot m^3 + 5 \quad 6.25 = k \cdot m^4 + 5$$

$$2.5 = km^3 \quad 1.25 = km^4$$

divide
equation
with largest
exponent

→

$$\frac{km^4}{km^3} = \frac{1.25}{2.5}$$

by
the equation
with smallest
exponent

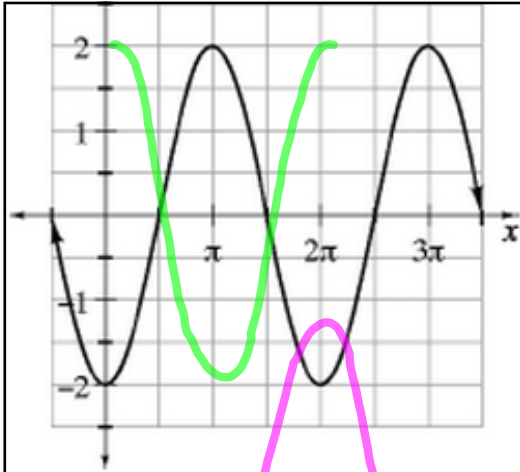
$$m^1 = \frac{1}{2}$$

^{New}
LAST Item of Ch. 7

Aim

Does it matter whether
sine or cosine is chosen?

7-155



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

$$2 \cos(x)$$

$$y = -2 \cos(x)$$

$$2 \cos(x - 100\pi)$$

$$y = 2 \cos(x + \pi)$$

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

The Buffalo Problem

Use your sketching abilities

Use your analytic thinking abilities

Work in a cooperative spirit

No calculators allowed.

Need $y = a \sin[b(\theta - h)] + k$

$$P = \frac{2\pi}{b}$$

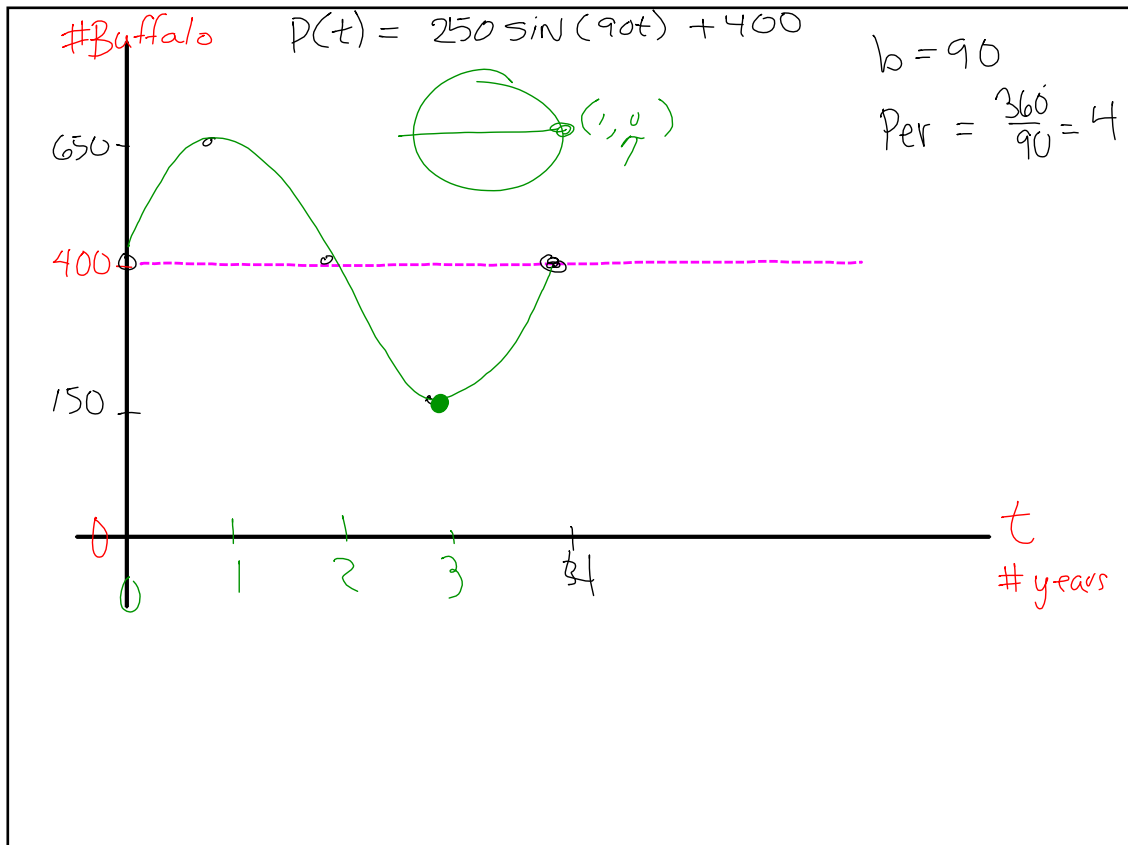
The population of water buffalo is given by the function

$$P(t) = 400 + 250 \sin(90t)$$

$$250 \sin(90t) + 400$$

where t = number of years since the first population estimate was made

- What was the initial estimate of the buffalo population ?
- What was the size after
 - 1 year ?
 - two years ?
- Find the smallest population and when it first occurs.



B.B.

Monday

Part I of the Ch. 7 test

Test
Info

LCOQ

Assignment

7..... 158-162, 166

The yellow HW
recording sheet will be
not be turned in until
the end of next week.

not!