Questions from Homework

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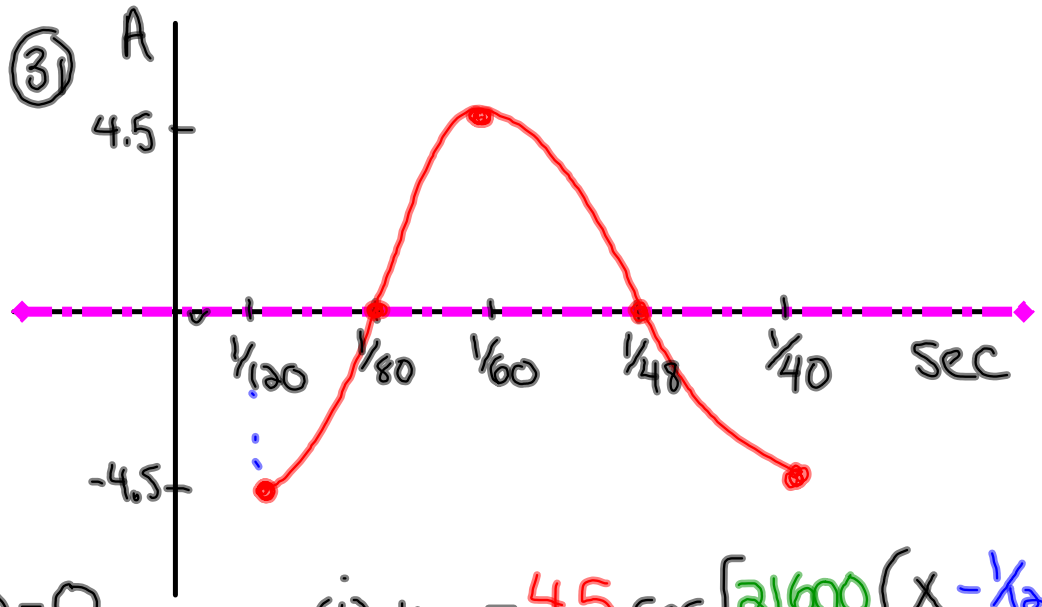


D=0

A=4.5

P=1/60

K=21600

C=1/120

(i) $y = -4.5\cos[21600(x - 1/120)]$

(ii) $y = -4.5\cos[21600(4 - 1/120)]$

$y = 4.5A$

(32) Period = Circumference

$= \pi d$

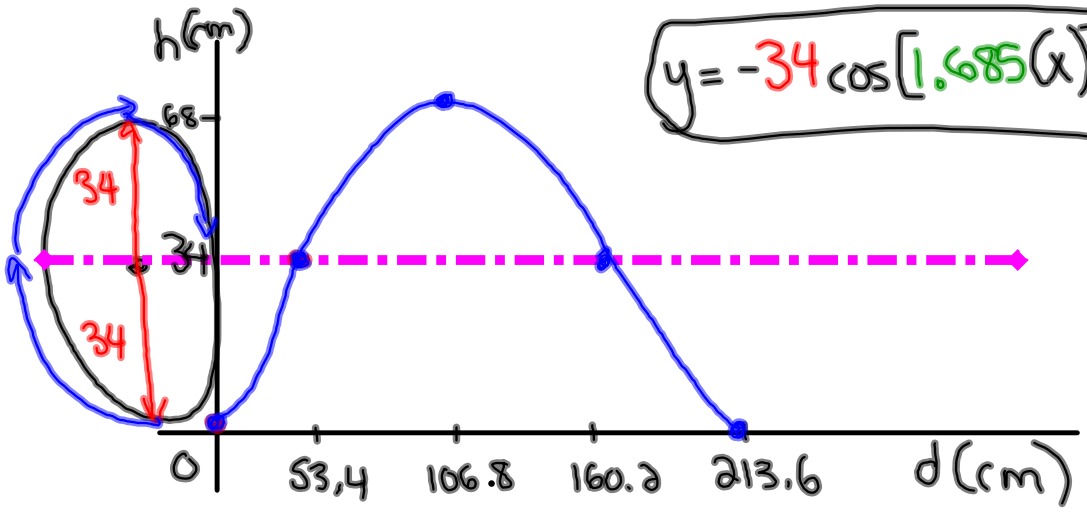
$= \pi(68)$

$= 213.64\text{cm}$

$P = 213.64$ $\quad A = 34$ $\quad D = 34$

$K = 1.685$ $\quad$ local min $= 0$ $\quad C = 0$

local max $= 68$



$y = -34\cos[1.685(x)] + 34$

(ii) $y = -34\cos[1.685(150)] + 34$

$= 44.08\text{ cm}$

Graph the following equation!

$$2(y+3) = 4\cos\left[2(x+30)\right] - 2$$

$$y+3 = 2\cos\left[2(x+30)\right] - 1$$

$$y = 2\cos\left[2(x+30)\right] - 4$$

$y = \cos x$

x	y
0	1
90	0
180	-1
270	0
360	1

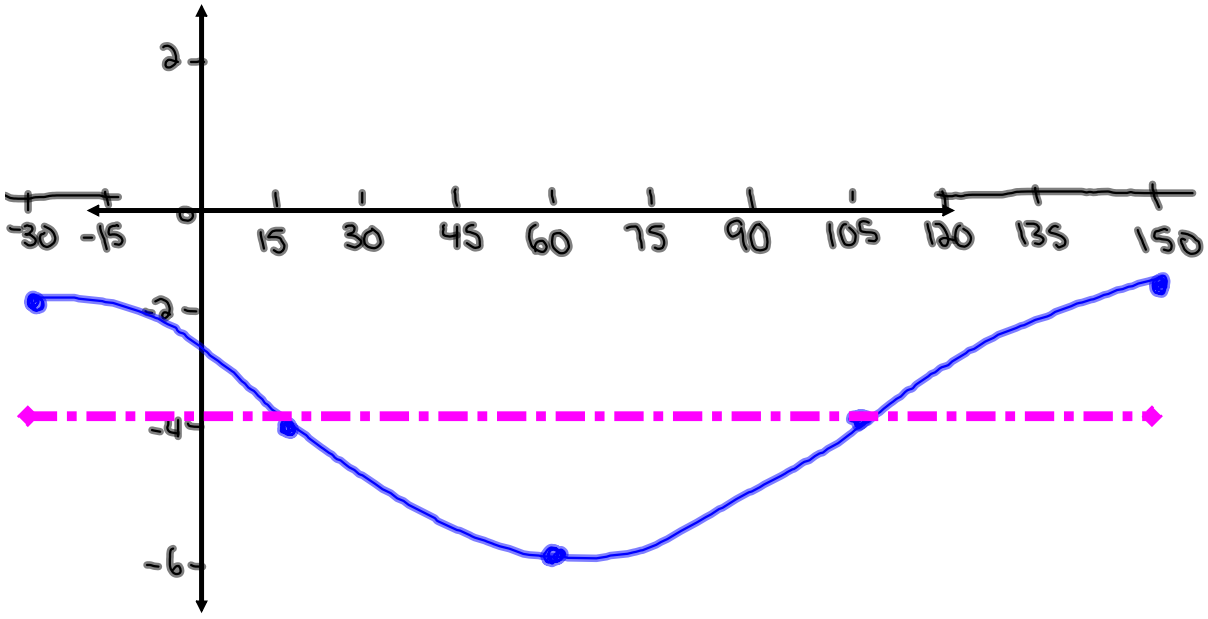
$A = 2$

$K = 2$ $\quad P = 180$

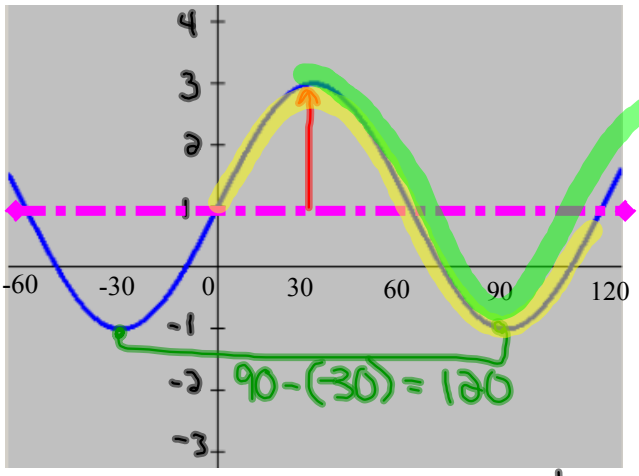
$C = -30$

$D = -4$

x	y
-30	-2
15	-4
60	-6
105	-4
150	-2



Find 4 equations to represent the following graph:



A = 2

P = 120

k = $\frac{360}{120} = 3$

D = 1

$+\sin x$ $(C=0)$ $y = 2\sin[3(x)]+1$	$\cos x$ $(C=30)$ $y = 2\cos[3(x-30)]+1$
$-\sin x$ $(C=-60)$ $y = -2\sin[3(x+60)]+1$	$-\cos x$ $(C=-30)$ $y = -2\cos[3(x+30)]+1$

A Ferris wheel has a radius of 12m and makes one revolution every 12 seconds. The bottom of the wheel is 2m above the ground. ***If a person gets on at the bottom and goes up,*** determine the following:

diameter

A = 12

P = 12

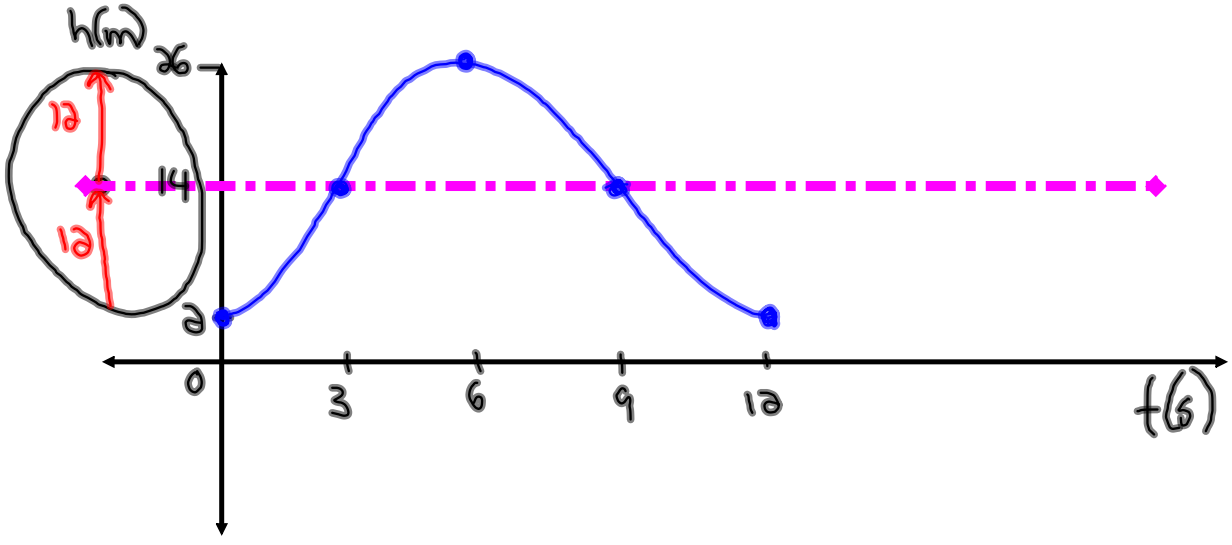
$k = \frac{360}{12} = 30$

D = 14

Max Height = 26 (2 + 24)

Min Height = 2

Equation: $y = -12\cos[30(x)] + 14$



A water wheel has a radius of 10m. 3 m of the wheel is submerged under water. If the wheel makes one revolution in 360 degrees and the bucket starts at the center and goes up, find the following:

diameter

A = 10

P = 360

k = 1

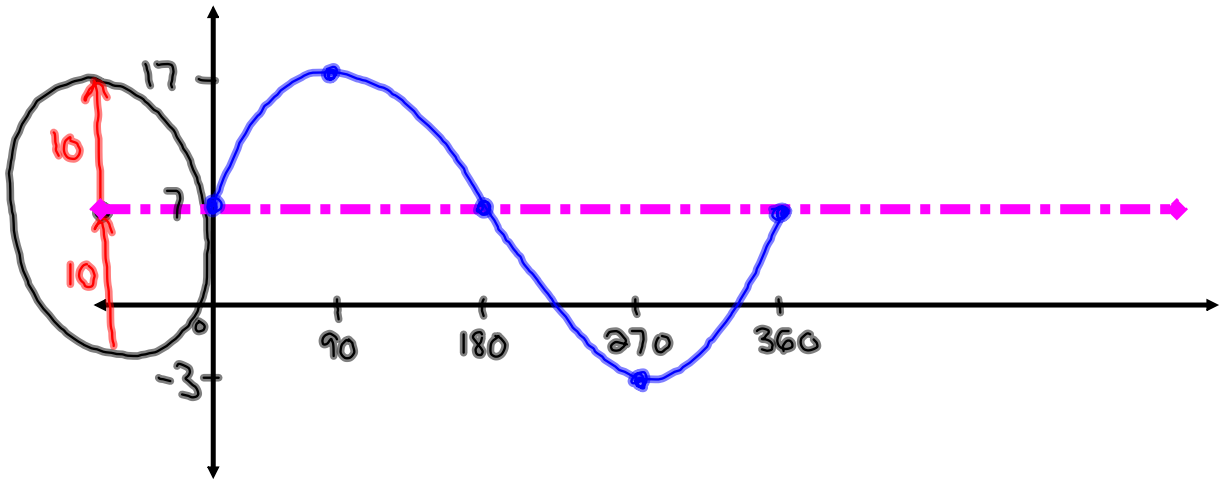
D = 7

Max Height = 17 (-3 + 20)

Min Height = -3

Equation: $y = 10\sin[1(x)] + 7$

or $y = 10\sin(x) + 7$



① d) $y = 9\sin[24(x)] + 6$

$0 = 9\sin[24(x)] + 6$

$\frac{-6}{9} = \frac{9\sin[24(x)]}{9}$

$-0.\overline{6} = \sin[24(x)]$

$\sin^{-1}(-0.\overline{6}) = 24x$

$\frac{-41.8}{24} = \frac{24x}{24}$

$-1.74s = x$

$-1.74 + 15 = 13.26s$

Period