Graphing Sine Function   May 13
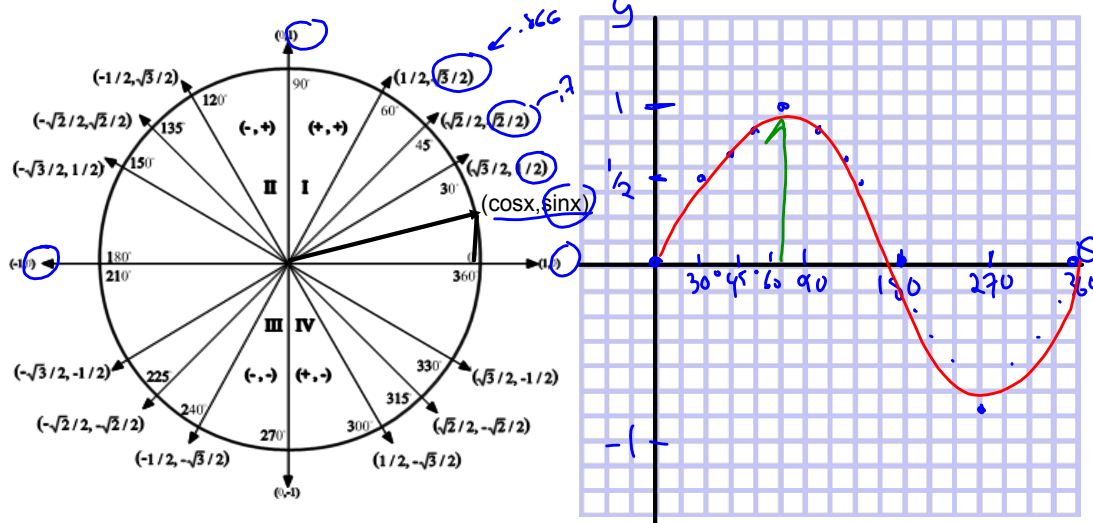
$$D = \{x \in \mathbb{R}\}$$

$$R = \{y \in \mathbb{R} / -1 \leq y \leq 1\}$$

PROPERTIES $f(x) = \sin x$

PERIOD $= 360°$

AXIS $= 0$

AMPLITUDE $= 1$

AMPLITUDE   AXIS   PERIOD $= \dfrac{360}{k}$

ex. a) $y = 3\sin(2x) + 1$ (b) $y = 4\cos(0.5x) - 2$

	(a)	(b)
AMPLITUDE	3	4
PERIOD	180°	720°
AXIS	y = 1	y = -2

$y = 3\sin(2x) + 1$

$y = 4\cos(0.5x) - 2$

1
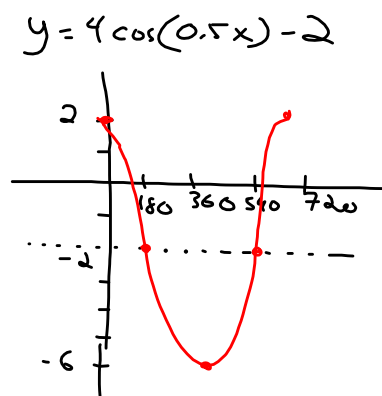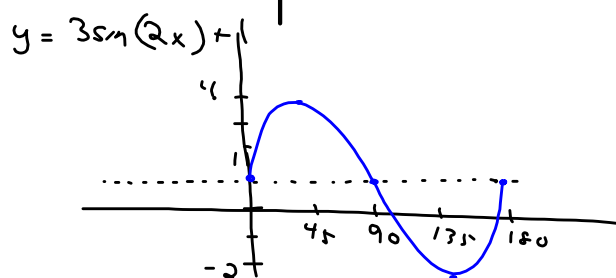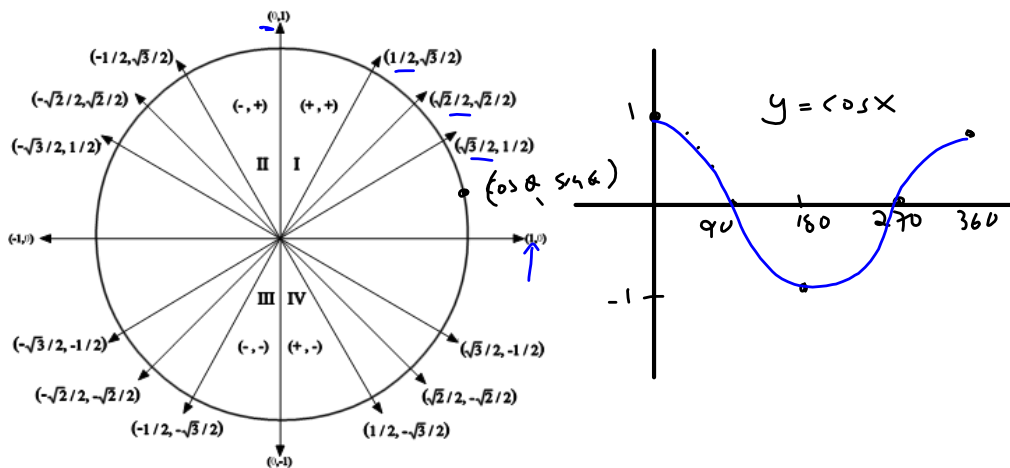
ex. $h(t) = \cos(36t)^\circ$ MODELS HEIGHT OF A BUOY RIDING THE WAVES.

a) SKETCH

PERIOD $= \dfrac{360}{k} = \dfrac{360}{36} = 10^\circ$
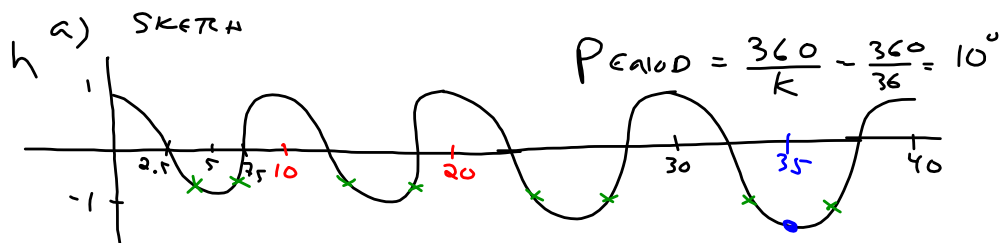
b) FIND HEIGHT AT 35 s.

$h(35) = \cos(36 \times 35) = -1$

∴ AT 35 s THE BUOY IS 1m BELOW SEA LEVEL.

c) FIND TIME TO FIRST REACH HEIGHT OF -0.8 m

$-0.8 = \cos(36t)$

$\cos^{-1}(-.8) = 36t$

$143.13 = 36t$

∴ $3.98 = t \doteq 4s$

d) DEVELOP AN EQUATION THAT GIVES ALL TIMES WHEN $\underline{h(t) = -.8}$

$t = \{4, 6\} + 10n, \; n \in \mathbb{I}$

p. 364#10,11,12,16

p. 370#1,4,5,6,8,11a