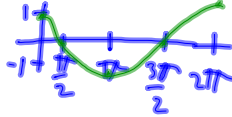**4. 5 Day 2** $y = \cos X$

Ex1) # 63 on page 295

$$4 - 4\cos X$$

$$d = 8 \cdot \tfrac{1}{2} = 4$$

$$a = 4$$

Period
amplitude
reflection
shift

Ex2) #66 on page 295

$$-4 - \tfrac{1}{2}\cos X$$

$$d = 1 \cdot \tfrac{1}{2} = \tfrac{1}{2}$$

$y = \sin X$

Ex3) #68 on page 295

$$\frac{2\pi}{|b|} = 4\pi \qquad y = 2\sin \tfrac{1}{2}X$$

$$(4\pi)\,\frac{b}{2\pi} = \frac{1}{4\pi}\,(4\pi)$$

$$2b = 1$$

$$b = \tfrac{1}{2}$$

$$d = 4 \cdot \tfrac{1}{2} = 2$$

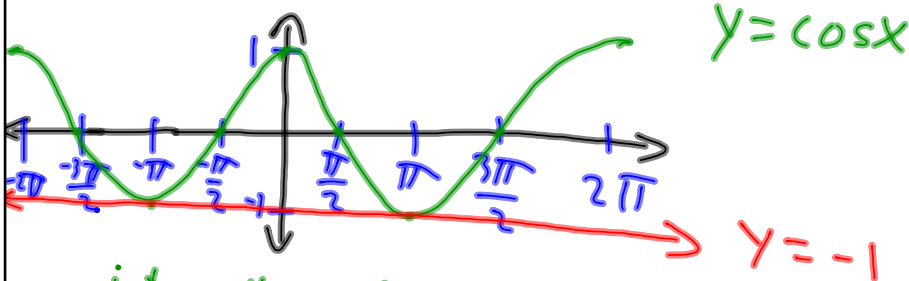$$a = 2$$

Ex4) Graph $y_1 = \cos x$ and $y_2 = -1$.
Find all real numbers x such that $y_1 = y_2$ in the interval $[-2\pi, 2\pi]$
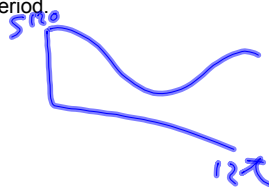
$y = \cos x$

$y = -1$

intersection of the two graphs are
at $x = \pi$ and $-\pi$

Ex6) A company that produces snowboards, which are seasonal products, forecasts monthly sales for 1 year to be:

$$S = 74.5 + 43.75\cos\frac{\pi t}{6}$$

where S is the sales in thousands of units and t is the time in months, with t=1 corresponding to Jaanuary.

(a) Use a graphing utility to graph the sales function over the one-year period.

Sno

12t

(b) Use the graph in part (a) to determine the months of maximum and minimum sales. Min: t=6 ⟹ June   Max.: t=12 ⟹ December