BE - Alg. 2 | Monday 3-7-11

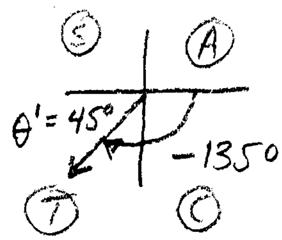
ACT practice ① Which of the following expressions is NOT equal to $\sin(-135°)$?

(A) $\sin 135°$ (D) $\sin 225°$

(B) $\cos 135°$ (E) $\sin 315°$

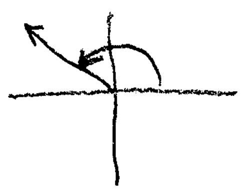
(C) $-\cos(-45°)$

$\sin(-135°) \Rightarrow$



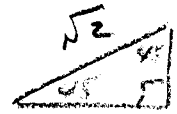
$= -\sin 45$

(A) $\sin(135°) \Rightarrow$



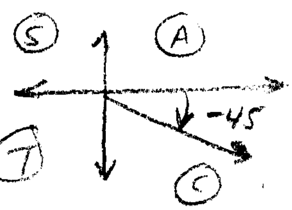
$= +\sin 45 = -\sin 45 \therefore$ (A)

(B) $\cos(135) \Rightarrow -\cos 45° = -\sin 45°$



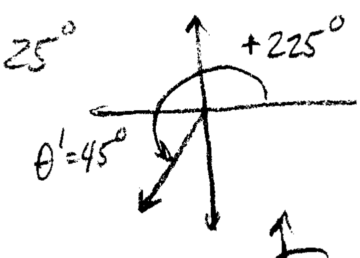
✓

(C) $-\cos(-45°) \Rightarrow$



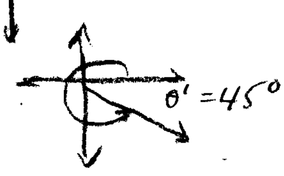
$-\cos(-45) = -\cos 45 = -\sin 45°$

(D) $\sin 225°$



$= -\sin 45°$ ✓

(E) $\sin 315°$



$= -\sin 45°$ ✓

$$\frac{\cos\theta}{\sec\theta-1}+\frac{\cos\theta}{\sec\theta+1}\overset{?}{=}2\cot^2\theta$$

Bonus
Q3 Quiz 5
Alg. 2

$$\frac{(\sec\theta+1)}{(\sec\theta+1)}\cdot\frac{\cos\theta}{\sec\theta-1}+\frac{\cos\theta}{\sec\theta+1}\cdot\frac{(\sec\theta-1)}{(\sec\theta-1)}=2\cot^2\theta$$

$$\frac{\sin^2\theta}{\cos^2\theta}+\frac{\cos^2\theta}{\cos^2\theta}=\frac{1}{\cos^2\theta}$$

$$\tan^2\theta+1=\sec^2\theta$$

$$\therefore \tan^2\theta=\sec^2\theta-1 \; *$$

$$\frac{\cos\theta(\sec\theta+1)+\cos\theta(\sec\theta-1)}{\sec^2\theta-1}\; *$$

$$\frac{\cos\theta\left[(\sec\theta+1)+(\sec\theta-1)\right]}{\tan^2\theta}$$

$$\frac{\cos\theta\,(2\sec\theta)}{\tan^2\theta}$$

$$\frac{2\cos\theta\,\frac{1}{\cos\theta}}{\frac{\sin^2\theta}{\cos^2\theta}}$$

$$\frac{2}{\frac{\sin^2\theta}{\cos^2\theta}}$$

$$\boxed{\frac{2\cos^2\theta}{\sin^2\theta}=2\cot^2\theta}$$

✓

LOOK AT $\boxed{y = \frac{1}{2}\cos(2\theta - 240)}$

AMPLITUDE $= \frac{1}{2}$ period $= \frac{360^\circ}{2} = 180^\circ$

Vert. Shift $= 0$ Horizontal Shift $= ?$

$\boxed{y = \frac{1}{2}\cos 2(\theta - 120)}$ 120° to right

Another way to look at horizontal SHIFT:

the shift is whatever value of θ

makes $(2\theta - 240) = 0$

$\theta_{SHIFT} = \frac{240}{2} = 120^\circ$ to right

(Ex) $(\theta - 50^\circ)$ $\theta_{SHIFT} = 50^\circ$

(Ex) $(5\theta + 20^\circ)$ $\theta_{SHIFT} = \frac{-20}{5} = 4^\circ$ to left

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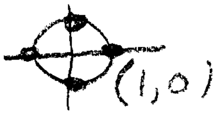
GRAPHING $\Rightarrow$ Don't Forget Power of T-Tables!!



θ	$y = \frac{1}{2}\cos(2\theta - 240)$
120	$\frac{1}{2}\cos(0) = \frac{1}{2}(1) = \frac{1}{2}$

Ch. 8 Conic Sections

Section ⇒ "cut"

cut a right cone ⇒ shape you get:

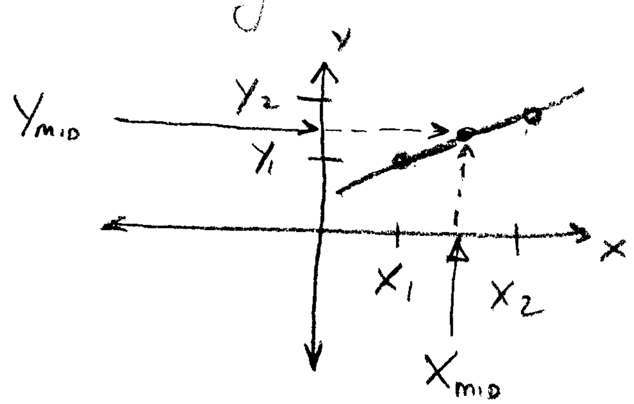
(flashlight demo) parabola, ellipse

circle, hyperbola

⇒ Basic "curves" of nature, each with their own properties (geometry) and Algebraic expressions.

Ch. 8-1 Midpoint and Distance Formulas

Line segment connecting $(x_1, y_1), (x_2, y_2)$



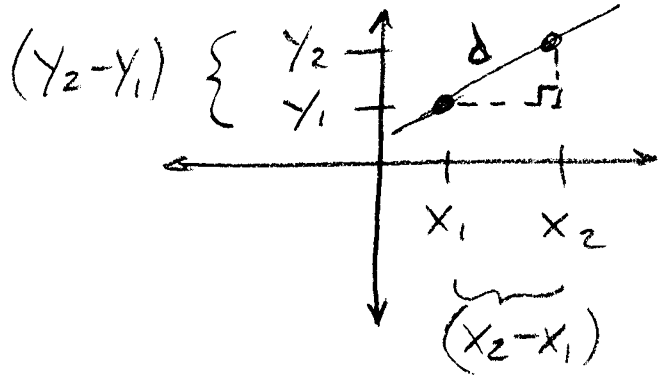
$$\boxed{\begin{aligned} M &= \text{midpoint} \\ &= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \end{aligned}}$$

Avg. of x_1, x_2 Avg. of $y_1\ y_2$

EX1 Pg 412 Find midpoint of line (segment) through $(4,5)$ and $(14,13)$

$$M = \left(\frac{4+14}{2}, \frac{5+13}{2}\right) = \boxed{(9,9)}$$

The distance between 2 points $(x_1,y_1), (x_2,y_2)$



$$d^2 = (x_2-x_1)^2 + (y_2-y_1)^2$$

$$* \boxed{d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}}$$

Ex2 Pg 413 Distance between $(-3,6), (4,-4)$

$$d = \sqrt{(-4-6)^2+(4+3)^2} = \sqrt{100+49} = \boxed{\sqrt{149}\text{ units}}$$

Homework: Pg 414 & 415 #10-13, 24-27.