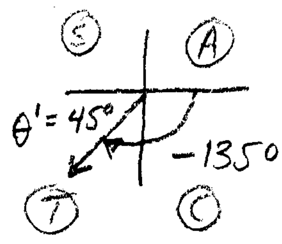
BE – Alg. 2 | Monday 2-22-12

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

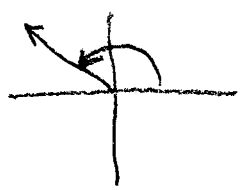
Ⓐ $\sin 135°$ Ⓓ $\sin 225°$

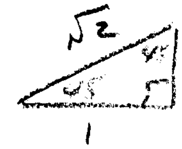
Ⓑ $\cos 135°$ Ⓔ $\sin 315°$

Ⓒ $-\cos(-45°)$

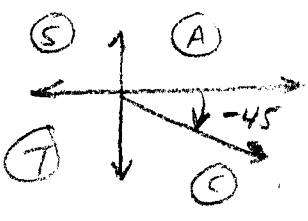
$\sin(-135°) \Rightarrow$ 

$= -\sin 45$

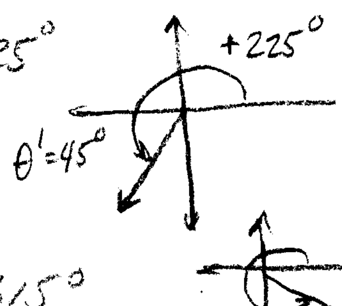
Ⓐ $\sin(135°) \Rightarrow$  $= +\sin 45 \neq -\sin 45 \therefore$ Ⓐ

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

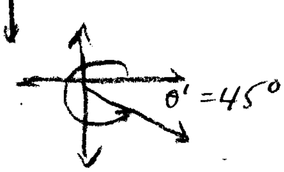
✓

Ⓒ $-\cos(-45°) \Rightarrow$ 

$-\cos(-45) = -\cos 45 = -\sin 45°$

Ⓓ $\sin 225°$ 

$= -\sin 45°$ ✓

Ⓔ $\sin 315°$ 

$= -\sin 45°$ ✓

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Bonus
Q3 QUIZ 5
Alg. 2

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

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

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

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

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

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

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

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

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

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

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

✓

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 $(2\theta - 240) = 0$

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

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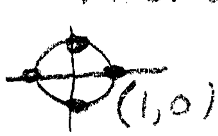
Graphing $\Rightarrow$ Don't Forget Power of T-Tables!!



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

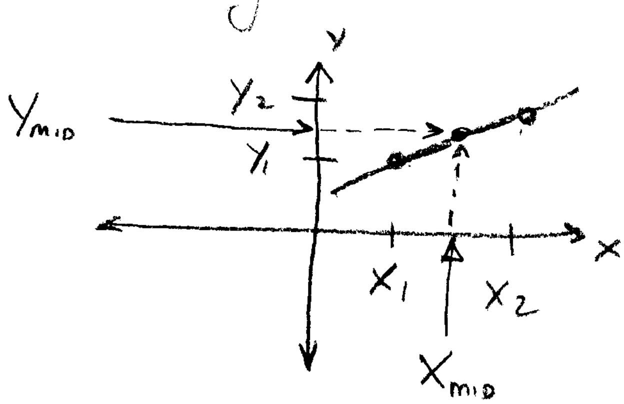
circle, hyperbola

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

Ch. 8-1 Midpoint and Distance Formulas

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



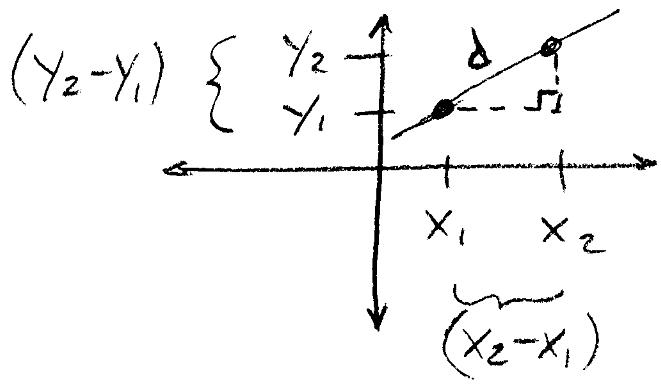
$$\boxed{\begin{aligned} M &= \text{midpoint} \\ &= \left(\frac{X_1+X_2}{2}, \frac{Y_1+Y_2}{2}\right) \end{aligned}}$$

Avg. of X_1, X_2 Avg. of $Y_1\ Y_2$

EX 1 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 $(x_1,y_1), (x_2,y_2)$



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

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

EX 2 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.