Warm - Up

March 28, 2017

THINK: Choose ONE problem from the review guide that was the most difficult.

PAIR: With your partner, decide which one between you was more difficult.

SHARE: Come to the board and mark it with a tally.

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Station 1

War

Play the traditional rules of the card game War with trigonometric expressions and angle measures.

Remember…
- The higher value wins.
- If you get undefined, you lose. (Unless you both get undefined… then WAR!)
- A draw means war.
- When you play war… 3 cards down, next card up.

Station 2

Guess Who

1. Choose a partner.

2. One partner will choose a function from the set.

3. The other partner must ask yes or no questions to eliminate the other functions until you are confidant you know your partner's function.

4. Switch roles.

Station 3

Matrix Think-Tac-Toe

Complete a tic-tac-toe (any column, row, or diagonal set of three problems to complete the activity). If finished early, see who can complete all 9 problems correctly the fastest.

Station 4

Conic Section Matching

Follow the directions on the Conic Section Puzzle activity page.

17. Use a determinant to find the area of a triangle with the vertices $(3, -1), (4, 2),$ and $(-2, 0)$.

$$\text{Area} = \frac{1}{2} \begin{vmatrix} 3 & -1 \\ 4 & 2 \\ -2 & 0 \end{vmatrix} \begin{matrix} 3 & -1 \\ 4 & 2 \\ -2 & 0 \end{matrix}$$

$$(6 + 2 + 0) - (-4 + 0 + -4)$$

$$8 - (-8)$$

$$\frac{1}{2}(16)$$

$$= \boxed{8}$$

9. Describe the shifts in the graph of g with respect to the graph of f.

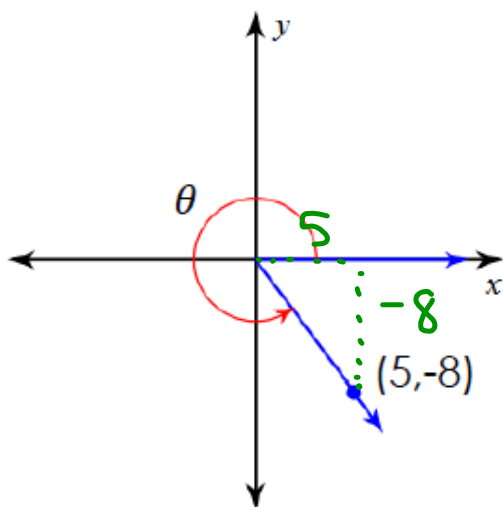$$g(x) = -4\cos\left[3x + \frac{\pi}{2}\right] \text{ and } f(x) = \cos(3x)$$

$VS = 0$

$VS = 0$

$PS = 0$

$PS = \dfrac{c}{b} = \dfrac{-\frac{\pi}{2}}{3}$

$-\dfrac{\pi}{2} \cdot \dfrac{1}{3} = -\dfrac{\pi}{6}$ $\dfrac{\pi}{6}$ to the left

23. Find $\tan \theta$, for the angle θ shown below.

$$\tan \theta = \frac{0}{A} = \frac{-8}{5}$$

21. Find the standard form of the equation of the ellipse with the foci $(-\sqrt{13}, 6)$ and $(\sqrt{13}, 6)$ and a vertex $(5, 6)$.

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$$

$$\frac{(x-0)^2}{25} + \frac{(y-6)^2}{12} = 1$$

$$c = \sqrt{13}$$

$$a = 5$$

$$c^2 = a^2 - b^2$$

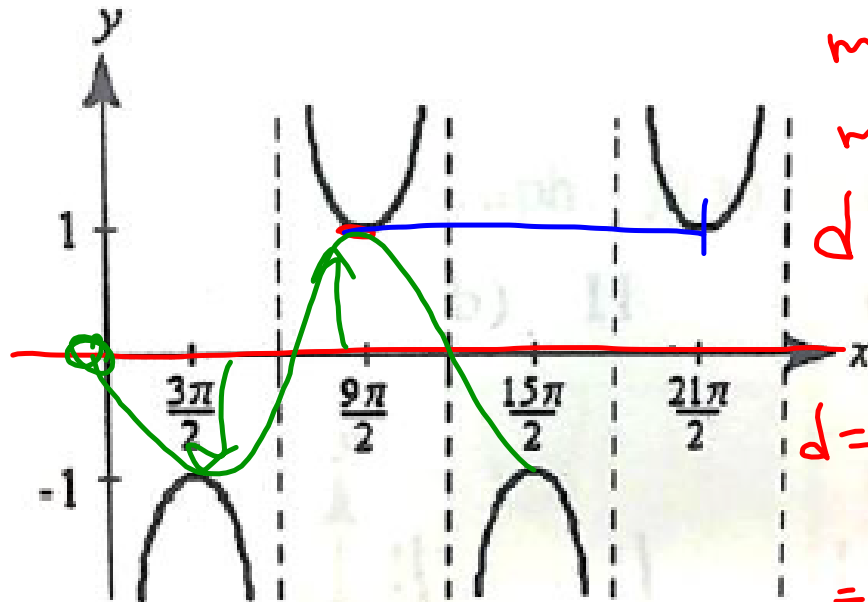$$13 = 25 - b^2$$

$$25 - 13 = b^2$$

$$b^2 = 12$$

$$\text{mid point} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{-\sqrt{13} + \sqrt{13}}{2}, \frac{6 + 6}{2} \right)$$

$$\left(\frac{0}{2}, \frac{12}{2} \right)$$

$$(0, 6)$$

24. Write the equation of the graph.

$$max = 1$$

$$min = -1$$

$$d = 0$$

$$d = \frac{max + min}{2}$$

$$= \frac{1 + ^-1}{2}$$

$$= 0$$

$$a = 1$$

$$b = \frac{2\pi}{per} \quad = \frac{2\pi \cdot \frac{2}{12\pi}}{\left(\frac{12\pi}{2}\right)} = \frac{4}{12} = \frac{1}{3}$$

$$b = \frac{1}{3}$$

$$-\sin$$

$$y = -1 \ csc\left(\frac{1}{3}x\right)$$

$$y = 1sec\left(\frac{1}{3}x - \frac{\pi}{2}\right)$$

$$PS = \frac{3\pi}{2} = \frac{C}{b} = \frac{C}{\left(\frac{1}{3}\right)}$$

$$\frac{1}{3} \cdot \frac{3\pi}{2} = \frac{C}{\left(\frac{1}{3}\right)} \cdot \left(\frac{1}{3}\right)$$

$$\frac{\pi}{2} = C$$

22. Classify the graph of $\overset{A}{\underline{3x^2}} + \overset{C}{\underline{4y^2}} + 5x - 6 = 0$.

$A = C$ circle

$AC > 0$ ellipse $Ax^2 + Cy^2 \ldots$

$AC < 0$ hyperbola

$AC = 0$ parabola

20. Find the center of the ellipse: $x^2 + 2y^2 - 12x - 20y + 22 = 0$

$$-22 \quad -22$$

$$x^2 + 2y^2 - 12x - 20y = -22$$

$$1(x^2 - 12x + \boxed{36}) + 2(y^2 - 10y + \Box) = -22 + \cancel{36} +$$

$$2\Box$$

$$1(x-6)^2 + 2(y-5)^2$$

$$\boxed{(6, 5)}$$