Bellwork Alg 2B Tuesday, December 5, 2017

Write the equation of each.

1. The Foci are at $(-12, 18)$ & $(-12, -4)$ and the length of the Transverse Axis is 16.

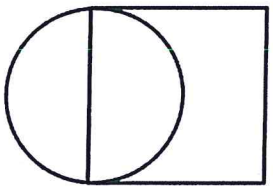
EQ:

2. The Transverse Axis is Horizontal and the equations of the Asymptotes are $y = \frac{3}{2}x - 8$ and $y = -\frac{3}{2}x + 16$

EQ:

3. In the figure below, the square has two sides which are tangent to the circle. If the area of the circle is $4a^2\pi$, what is the area of the square?

A. $2a^2$ B. $4a$ C. $4a^2$ D. $16a^2$ E. $64a^2$



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ANSWERS

Write the equation of each.

1. The Foci are at (−12, 18) & (−12, −4) and the length of the Transverse Axis is 16.

center $\left(\frac{-12+-12}{2}, \frac{18+-4}{2}\right)$

center $(-12, 7)$

$2a = 16$

$a = 8$ $a^2 = 64$

EQ:

$$\frac{(y-7)^2}{64} - \frac{(x+12)^2}{57} = 1$$

a^2 b^2

$c = 11$

$c^2 = 121$

F (−12, 18)

center (−12, 7)

F (−12, −4)

$c^2 = a^2 + b^2$

$121 = 64 + b^2$

$57 = b^2$

2. The Transverse Axis is Horizontal and the equations of the Asymptotes are $y = \frac{3}{2}x - 8$ and $y = -\frac{3}{2}x + 16$

center

V V

center is where asymptotes intersect:

$2\left(\frac{3}{2}x - 8\right) = \left(-\frac{3}{2}x + 16\right)2$

$3x - 16 = -3x + 32$

$+3x \quad +3x$

$6x - 16 = 32$

$+16 \quad +16$

$\frac{6x}{6} = \frac{48}{6}$

$x = 8$

$y = \frac{3}{2}(8) - 8 = 12 - 8 = 4$

EQ:

$$\frac{(x-8)^2}{4} - \frac{(y-4)^2}{9} = 1$$

slope of asymptotes $= \pm\frac{3}{2} = \frac{y}{x} = \frac{b}{a}$

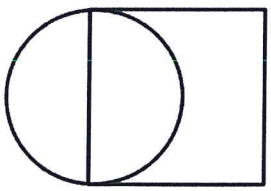
$b = 3$ $b^2 = 9$

$a = 2$ $a^2 = 4$

center: (8, 4)

3. In the figure below, the square has two sides which are tangent to the circle. If the area of the circle is $4a^2\pi$, what is the area of the square?

A. $2a^2$ B. $4a$ C. $4a^2$ D. $16a^2$ E. $64a^2$



area of a circle

$\frac{\pi r^2}{\pi} = \frac{4a^2\pi}{\pi}$

$\sqrt{r^2} = \sqrt{4a^2}$

$r = 2a$

therefore diameter of the circle $= 2(2a) = 4a$

The diameter of the circle is equal to the length of the side of the square

Area of a square $= (\text{side})^2 = (4a)^2 = 16a^2$