Answer on Question #57352 - Math - Analytic Geometry

Question

Graph the equation below, the graph is scaled 9 high and 9 wide

1. $x^2 - \dfrac{y^2}{4} = 1$

Solution
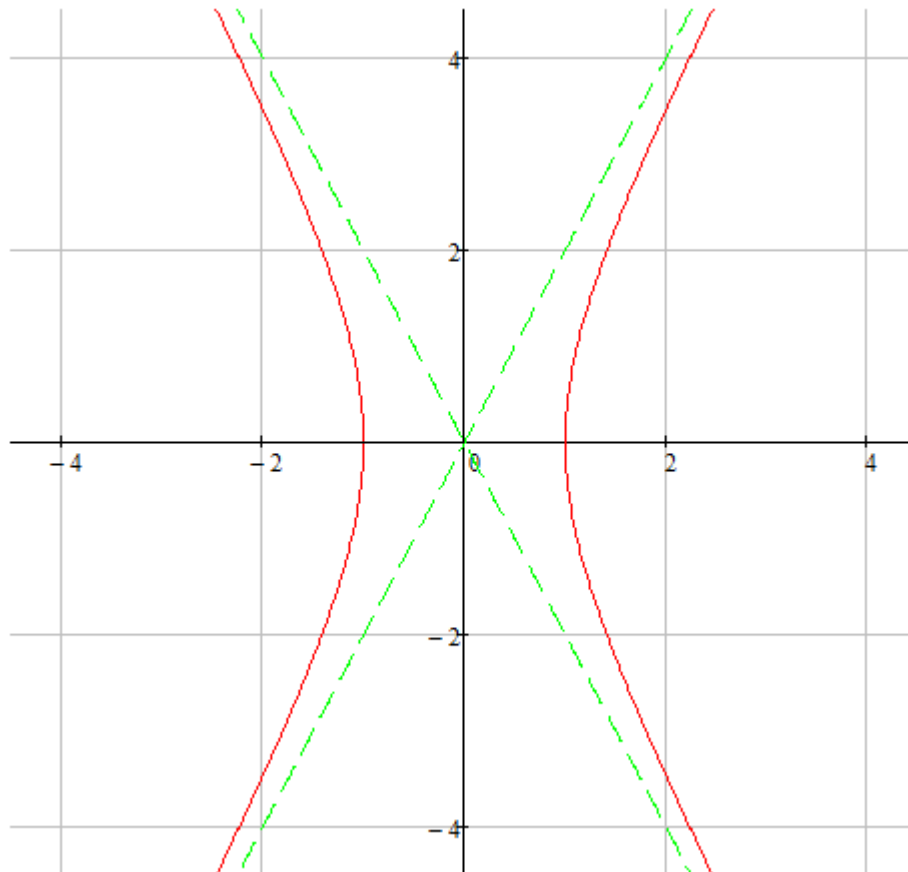
$$\frac{x^2}{1^2} - \frac{y^2}{2^2} = 1$$

$a = 1, b = 2$

Vertices: $(\pm 1, 0)$

Co-vertices: $(0, \pm 2)$

Asymptote: $y = \pm\dfrac{2}{1}x$

Foci: $(\pm c, 0) = (\pm\sqrt{5}, 0)$

Answer:

2. $\dfrac{y^2}{9} - \dfrac{x^2}{4} = 1$

Solution

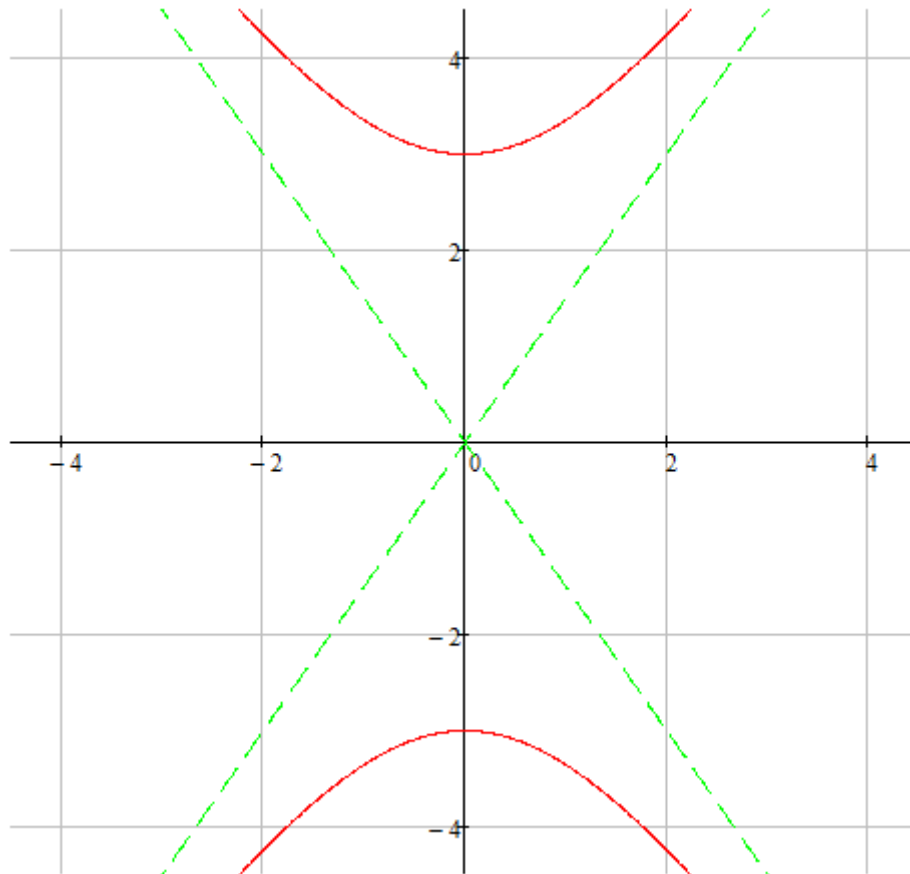$$\dfrac{y^2}{3^2} - \dfrac{x^2}{2^2} = 1$$

$a = 3, b = 2$

Vertices: $(0, \pm 3)$

Co-vertices: $(\pm 2, 0)$

Asymptote: $y = \pm \dfrac{3}{2}x$

Foci: $(0, \pm c) = (0, \pm\sqrt{13})$

Answer:

3. $\dfrac{y^2}{2} - \dfrac{x^2}{4} = 1$

Solution

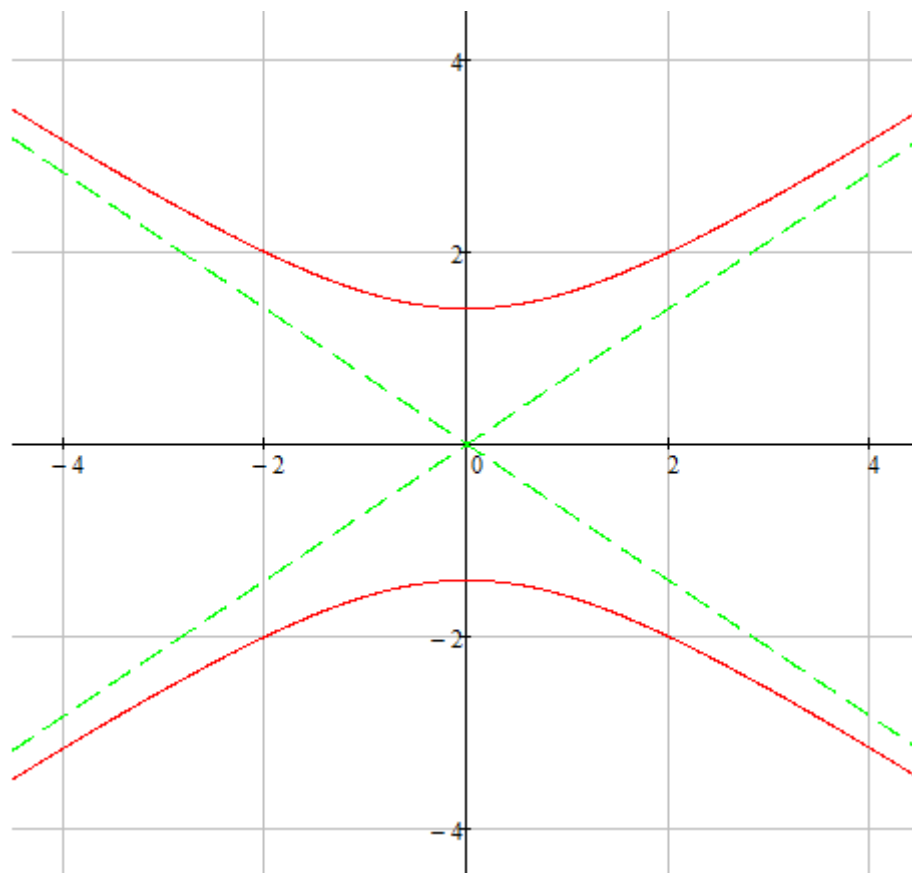$$\dfrac{y^2}{(\sqrt{2})^2} - \dfrac{x^2}{2^2} = 1$$

$a = \sqrt{2}, \ b = 2$

Vertices: $(0, \pm\sqrt{2})$

Co-vertices: $(\pm 2, 0)$

Asymptote: $y = \pm\dfrac{\sqrt{2}}{2}x = \pm\dfrac{1}{\sqrt{2}}x$

Foci: $(0, \pm c) = (0, \pm\sqrt{6})$

Answer:

4. $y^2 - \dfrac{x^2}{9} = 1$

Solution

$$\dfrac{y^2}{1^2} - \dfrac{x^2}{3^2} = 1$$

$a = 1, b = 3$

Vertices: $(0, \pm 1)$

Co-vertices: $(\pm 3, 0)$

Asymptote: $y = \pm \dfrac{1}{3}x$

Foci: $(0, \pm c) = (0, \pm \sqrt{10})$

Answer: