

Answer on Question #57229 – Math – Calculus

Question

What are the equations for the asymptote of this hyperbola $\frac{y^2}{36} - \frac{x^2}{121} = 1$?

- A. $y = \pm \frac{11}{6}x$
- B. $y = \pm \frac{\sqrt{85}}{5}x$
- C. $y = \pm \frac{\sqrt{157}}{5}x$
- D. $y = \pm \frac{6}{11}x$

Solution

The general equation of the hyperbola is $\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$. Hence $a = 6$ and $b = 11$.

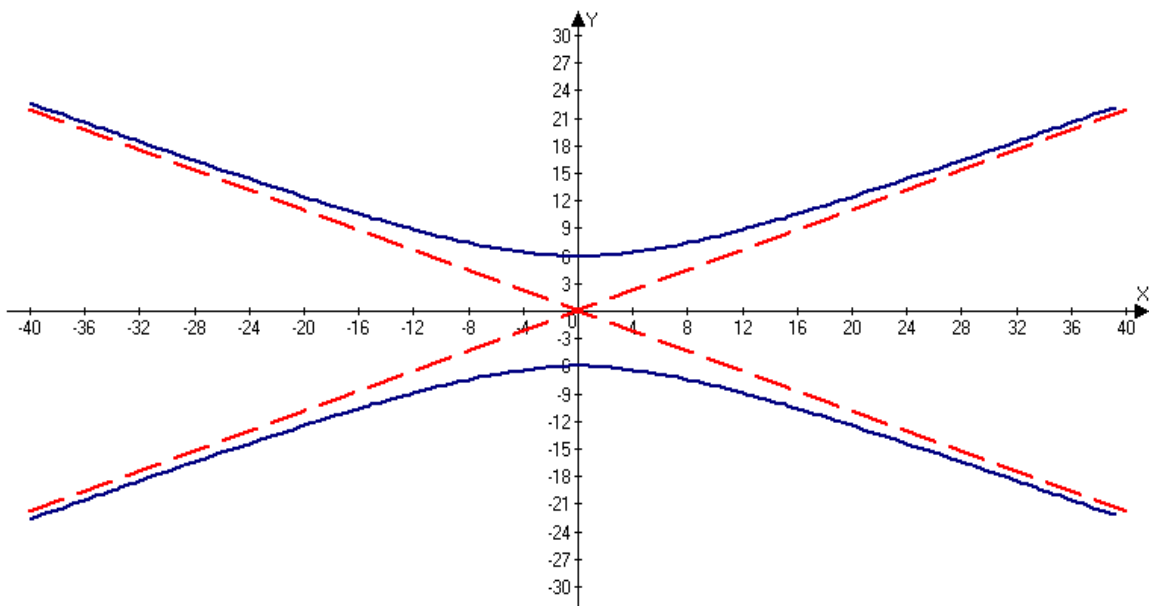
Since the minus sign beside the variable x , hyperbola has vertical transverse axis, the center is a point $(0,0)$. In this case equations for the asymptote has form $y = \pm \frac{a}{b}x$.

Hence, equations for the asymptote are

$$y = \frac{6}{11}x \text{ and } y = -\frac{6}{11}x.$$

The correct answer is D. $y = \pm \frac{6}{11}x$.

Plot of the hyperbola and its asymptotes



Hyperbole is a blue line and its asymptotes are red lines.

Answer: D: $y = \frac{6}{11}x$ and $y = -\frac{6}{11}x$.