

Write the equation of the Hyperbola in standard form.

1. $9x^2 - y^2 - 36x - 6y + 18 = 0$

2. $16y^2 - x^2 + 2x + 64y + 47 = 0$

3. $6x^2 - 4y^2 - 12x - 8y - 46 = 0$

4. $9y^2 - x^2 + 2x + 54y + 62 = 0$

Identify if the following Hyperbola will be horizontal or vertical. DO NOT GRAPH.

5. $(y-3)^2 - (x-2)^2 = 1$	6. $-\frac{(y+3)^2}{9} + \frac{(x+2)^2}{4} = 1$	7. $\frac{(y+2)^2}{16} - \frac{(x-1)^2}{49} = 1$
8. $\frac{x^2}{1} - \frac{y^2}{4} = 1$	9. $\frac{(y+1)^2}{4} - \frac{(x+1)^2}{4} = 1$	10. $\frac{(x+2)^2}{25} - \frac{(y-1)^2}{9} = 1$

Write the standard form of the equation of the specified Hyperbola.

11. Vertices $(0, \pm 2)$: foci $(0, \pm 4)$

12. Vertices $(\pm 1, 0)$; Asymptotes $y = \pm 5x$

13. Vertices $(2, 0)$ and $(6, 0)$; Foci $(0, 0)$ and $(8, 0)$

14. Vertices $(4, 1)$ and $(4, 9)$; Foci $(4, 0)$ and $(4, 10)$

15. Vertices $(-2, 1)$ and $(2, 1)$; Foci $(-3, 1)$ and $(3, 1)$

16. Vertices $(4, 1)$ and $(4, 5)$; Asymptote $y - 3 = \pm \frac{2}{3}(x - 4)$

17. Center at $(3, -1)$ with transverse axis of length 8 and Foci at $(3, 4)$ and $(3, -6)$

18. An Asymptote $y - 2 = \pm \frac{1}{3}(x + 4)$ and a vertical transverse axis (aka opens up and down)