

Conics 8 – Ellipses

Write an equation in standard form that satisfies each set of conditions. Then graph each ellipse. Label all important points.

1. Vertices : $(\pm 5, 0)$, Foci : $(\pm 3, 0)$
2. Center at origin, Focus : $(0, 12)$, Vertex : $(0, -13)$
3. Center : $(3, 5)$, Vertex : $(3, 10)$, One endpoint of minor axis : $(0, 5)$
4. Endpoints of first latus rectum : $(-2, 12\frac{1}{13})$, $(-2, 10\frac{1}{13})$, Endpoints of second latus rectum : $(8, 12\frac{1}{13})$, $(8, -10\frac{1}{13})$
5. Major axis horizontal with length of 20, Length of minor axis = 12, Center : $(4, 5)$
6. Center : $(-3, 4)$, Vertex : $(11, 4)$, Focus : $(4, 4)$
7. Major axis is vertical with a length of 16, Length of a latera recta is 6, Center : $(-3, 2)$
8. Vertices : $(-3, 2)$ and $(7, 2)$, Passes through the point $(5, 4)$
9. Vertices : $(-6, 16)$ and $(-6, -10)$, Foci : $(-6, 15)$ and $(-6, -9)$
10. Vertices : $(1, 3)$ and $(1, 14)$, Passes through the point $(4, 10)$
11. Endpoints of the minor axis : $(1, 3)$ and $(1, -3)$, Focus : $(-3, 0)$
12. Major axis horizontal with a length of 37, Length of minor axis is 22, Center : $(-5, -3)$
13. Major axis vertical with a length of $\sqrt{41}$, Length of minor axis is $\sqrt{28}$, Center : $(3, 7)$
14. Major axis horizontal with length of 10, Length of minor axis is 10, Vertex : $(0, 5)$
15. Vertex : $(-7, -3)$, Focus : $(-7, -6)$, Center : $(-7, -10)$
16. Major axis vertical with length of 15, Center : $(3, 2\frac{1}{2})$, Passes through the point $(5, -4)$
17. Vertices : $(-3\frac{1}{2}, 6)$ and $(-3\frac{1}{2}, -7)$, Foci : $(-3\frac{1}{2}, 4)$ and $(-3\frac{1}{2}, -5)$
18. Major axis vertical with length of 10, Focus : $(-3, -5)$, Distance from focus to center is 3
19. Center : $(-10, -8)$, Endpoints of minor axis : $(-10, -4\frac{2}{5})$ and $(-10, -11\frac{3}{5})$, Length of major axis is $2\sqrt{41}$
20. Center at origin, Minor axis vertical with length 13, Major axis length 14
21. Endpoints of first latus rectum : $(-7\frac{3}{5}, 2)$ and $(-\frac{2}{5}, 2)$, Endpoints of second latus rectum : $(-7\frac{3}{5}, -14)$ and $(-\frac{2}{5}, -14)$
22. Vertices : $(-7, 1)$ and $(5, 1)$, passes through the point : $(1, 3)$
23. Center : $(-4, 8)$, One endpoint of minor axis : $(-7, 8)$, One focus : $(-4, 14)$
24. Endpoints of the major axis : $(1\frac{1}{2}, \frac{10}{21})$ and $(1\frac{1}{2}, -3\frac{17}{21})$, Endpoints of the minor axis : $(1, -1\frac{2}{3})$ and $(2, -1\frac{2}{3})$