|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Circle | Parabola | Ellipse | Hyperbola |
| Graph | C:\Users\joren\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\N1B5Z7IZ\995px-Cartesian-coordinate-system-with-circle.svg[1].png | C:\Users\joren\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\0BGVE7XY\30e589964d41228110a7030944e8f706[1].jpgC:\Users\joren\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\0BGVE7XY\180px-Horizontal_Parabola[1].jpg |  | Horizontal Vertical  Transverse axis determines orientation.  C:\Users\joren\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\9J8LZNX2\CNX_Precalc_Figure_10_02_005n[1].jpg |
| Equations | 2 squared terms,  same coefficients,  same signs | Vertical:    Horizontal:    1 squared term | Horizontal:  Vertical:  Two squared terms, different coefficients,  same signs. | Horizontal:  Asymptote:  Vertical:  Asymptote:  Two squared terms, any coefficient, different signs |
| Properties | Center (h,k)  Radius= r | Vertex (h,k)  F: (h, k + ), (h +  D: y = k - , x = h-    Focus Vertex  P  Directrix Vertex | a (Tells direction)  a = middle to vertex  2a = major axis  b = middle to co-vertex  2b = minor axis  c = middle to focus  a2- b2= c2  c < a | No restriction on a and b  a = middle to vertex on transverse axis  b = middle to other side of “box” on conjugate axis  c = middle to focus  a2+ b2= c2  a < c |

Complete the square to put standard form into center/vertex form.