Clasificación de cónicas

1.– $\boxed{r=1, R=1, |s|=1, |S|=1} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}\right)$ Recta doble

2.– $\boxed{r=1, R=2, |s|=1, |S|=2} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 0 & 0 \\ \hline 0 & 0 & +1 \end{array}\right)$ Vacío

3.– $\boxed{r=1, R=2, |s|=1, |S|=0} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 0 & 0 \\ \hline 0 & 0 & -1 \end{array}\right)$ Rectas paralelas

4.– $\boxed{r=1, R=3, |s|=1, |S|=1} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 0 & -1 \\ \hline 0 & -1 & 0 \end{array}\right)$ Parábola

5.– $\boxed{r=2, R=2, |s|=2, |S|=2} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 1 & 0 \\ \hline 0 & 0 & 0 \end{array}\right)$ Punto

6.– $\boxed{r=2, R=2, |s|=0, |S|=0} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & -1 & 0 \\ \hline 0 & 0 & 0 \end{array}\right)$ Par de rectas secantes

7.– $\boxed{r=2, R=3, |s|=2, |S|=3} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 1 & 0 \\ \hline 0 & 0 & 1 \end{array}\right)$ Vacío

8.– $\boxed{r=2, R=3, |s|=2, |S|=1} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & 1 & 0 \\ \hline 0 & 0 & -1 \end{array}\right)$ Elipse

9.– $\boxed{r=2, R=3, |s|=0, |S|=1} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & -1 & 0 \\ \hline 0 & 0 & 1 \end{array}\right)$ Hipérbola

10.– $\boxed{r=2, R=3, |s|=0, |S|=1} \Rightarrow \left(\begin{array}{cc|c} 1 & 0 & 0 \\ 0 & -1 & 0 \\ \hline 0 & 0 & -1 \end{array}\right)$ Hipérbola

Clasificación de cuádricas

1.– $\boxed{r=1, R=1, |s|=1, |S|=1} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 \end{array}\right)$ Plano doble

2.– $\boxed{r=1, R=2, |s|=1, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$ Vacío

3.– $\boxed{r=1, R=2, |s|=1, |S|=0} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & -1 \end{array}\right)$ Par de planos paralelos

4.– $\boxed{r=1, R=3, |s|=1, |S|=1} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 \\ \hline 0 & 0 & -1 & 0 \end{array}\right)$ Cilindro parabólico

5.– $\boxed{r=2, R=2, |s|=2, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 \end{array}\right)$ Recta

6.– $\boxed{r=2, R=2, |s|=0, |S|=0} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 \end{array}\right)$ Planos secantes

7.– $\boxed{r=2, R=3, |s|=2, |S|=3} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$ Vacío

8.– $\boxed{r=2, R=3, |s|=2, |S|=1} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & -1 \end{array}\right)$ Cilindro elíptico

9.– $\boxed{r=2, R=3, |s|=0, |S|=1} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & \pm 1 \end{array}\right)$ Cilindro hiperbólico

10.– $\boxed{r=2, R=4, |s|=2, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 \\ \hline 0 & 0 & -1 & 0 \end{array}\right)$ Paraboloide elíptico

11.– $\boxed{r=2, R=4, |s|=0, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 \\ \hline 0 & 0 & -1 & 0 \end{array}\right)$ Paraboloide hiperbólico

12.– $\boxed{r=3, R=3, |s|=3, |S|=3} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & 0 \end{array}\right)$ Punto

13.– $\boxed{r=3, R=3, |s|=1, |S|=1} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ \hline 0 & 0 & 0 & 0 \end{array}\right)$ Cono

14.– $\boxed{r=3, R=4, |s|=3, |S|=4} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$ Vacío

15.– $\boxed{r=3, R=4, |s|=3, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & -1 \end{array}\right)$ Elipsoide

16.– $\boxed{r=3, R=4, |s|=1, |S|=2} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$ Hiperboloide de dos hojas

17.– $\boxed{r=3, R=4, |s|=1, |S|=0} \Rightarrow \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ \hline 0 & 0 & 0 & -1 \end{array}\right)$ Hiperboloide de una hoja