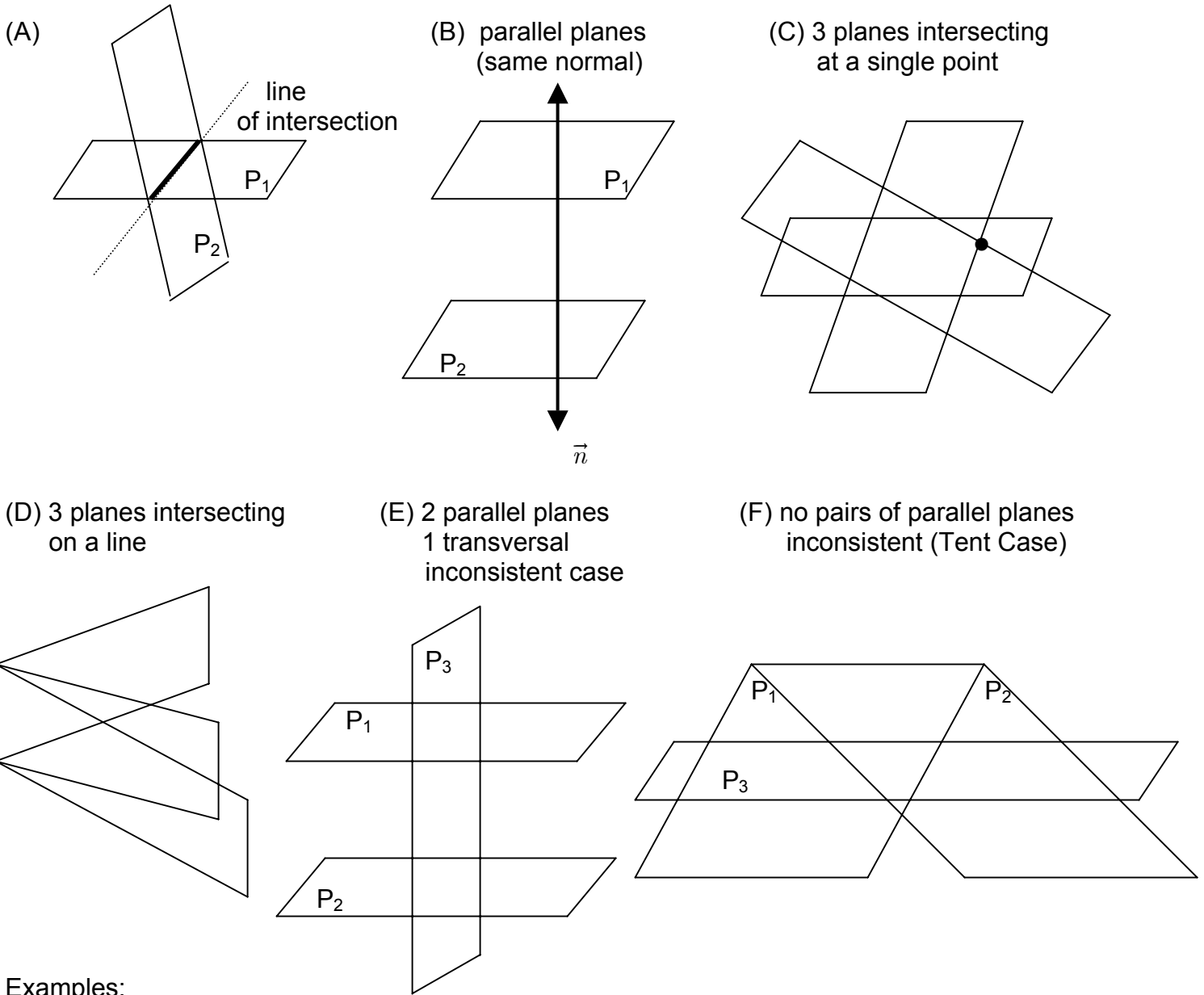


Intersection of PLANES



Examples:

(A)
$$\begin{cases} x + y + z = 7 \\ 3x - y - z = 2 \end{cases}$$

(B)
$$\begin{cases} x + 2y - z = 4 \\ 2x + 4y - 2z = 10 \end{cases}$$
 or same plane
$$\begin{cases} x + 2y - z = 4 \\ 2x + 4y - 2z = 8 \end{cases}$$

inconsistent system

(C)
$$\begin{cases} x + 4y + 2z = 8 \\ 3x + 10y + 10z = 30 \\ 7x + 4y + 2z = 28 \end{cases}$$

$(x, y, z) = \left(\frac{10}{3}, \frac{1}{3}, \frac{5}{3}\right)$

(D)
$$\begin{cases} x + 3y + 4z = 12 \\ 2x + 5y + 2z = 20 \\ 4x + 11y + 10z = 44 \end{cases}$$

(E)
$$\begin{cases} x + 2y - z = 4 \\ 3x + y + z = 10 \\ 2x + 4y - 2z = 10 \end{cases}$$

inconsistent system

(F)
$$\begin{cases} -x + 4y + 2z = 5 \\ 3x - 13y + z = 6 \\ 5x - 22y + 4z = 20 \end{cases}$$

inconsistent system

$(x, y, z) = (14t, 4 - 6t, t)$

Note: 2 of 3 planes are parallel

Note: no two of the planes are parallel