$$\begin{cases} \dot{x} = \sigma(y-x) \\ \dot{y} = rx - y - xz \\ \dot{z} = xy - bz \end{cases} \qquad \begin{aligned} \sigma &= 10 \\ b &= 8/3 \\ r &= 28 \end{aligned}$$

a) $\dot{x} = \dot{y} = \dot{z} = 0 \Rightarrow$

$0 = y - x \Rightarrow x = y$ (1)

$0 = rx - y - xz$ (1) $\Rightarrow y(r - 1 - z) \Rightarrow y_1^* = 0 \Rightarrow z = r - 1$

$0 = xy - bz \Rightarrow z_1^* = 0 \qquad x_1^* = 0$

$y^2 - bz \Rightarrow z = \frac{y^2}{b} = r - 1 \Rightarrow y = \pm\sqrt{b(r-1)} = x$

fp's ⇒ 1) $(0,0,0)$
2) $(\sqrt{72}, \sqrt{72}, 27)$
3) $(-\sqrt{72}, -\sqrt{72}, 27)$

c) $$\mathbb{J} = \begin{bmatrix} -\sigma & \sigma & 0 \\ r - z & -1 & -x \\ y & x & -b \end{bmatrix}$$

d) $-(\sigma + 1 + b)$

→ a) Mathematica gives changing sign in eigenvalues
→ all unstable