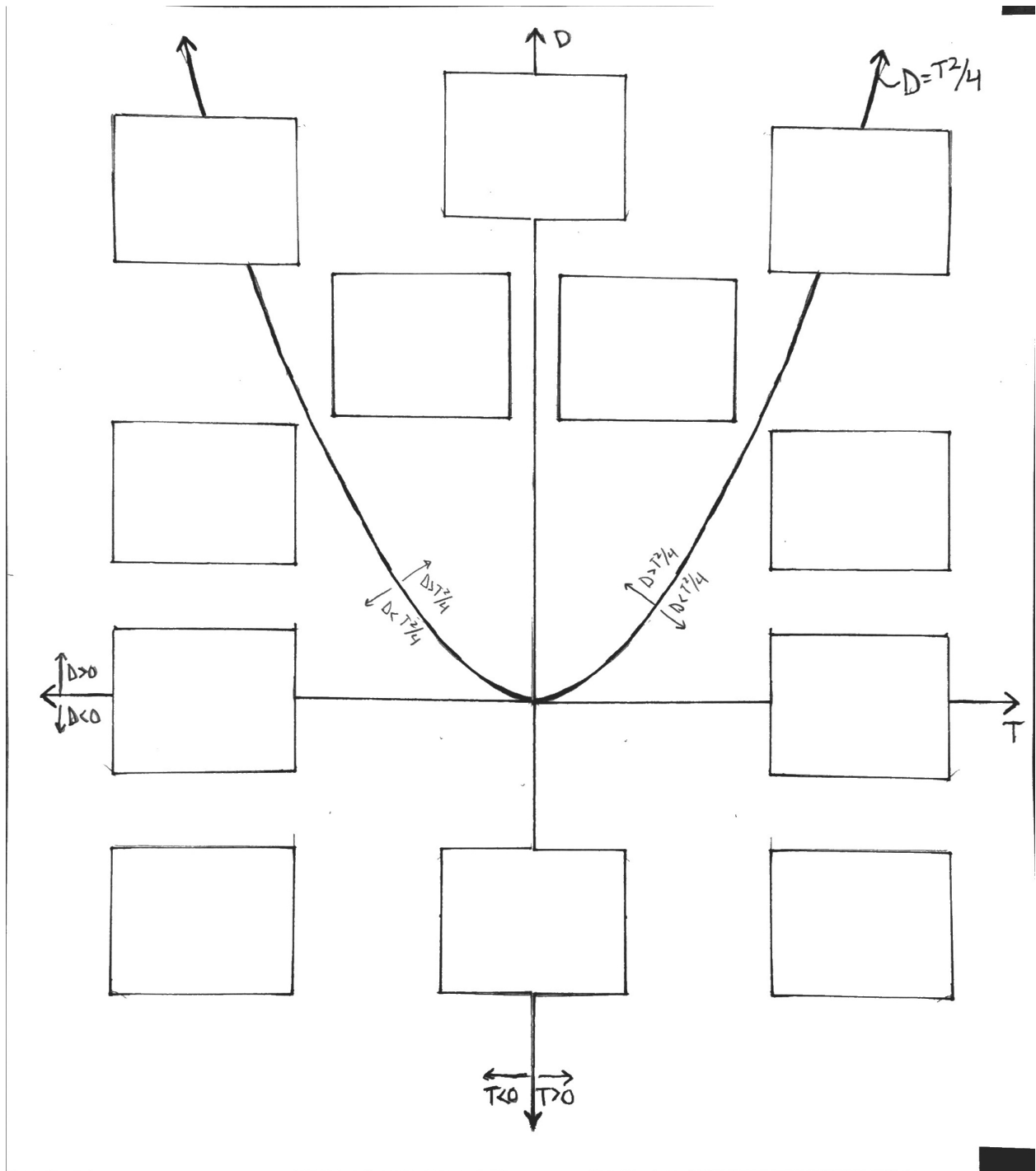


§3.7 (PART 1): TRACE-DETERMINANT PLANE

1.] Label the Trace-Determinant Plane below.



2.] For each system below, find the classify the stability of the origin using only the trace and determinant.

$$(a) \quad \begin{aligned} \frac{dx}{dt} &= 2x + 2y \\ \frac{dy}{dt} &= -4x + 6y \end{aligned}$$

$$(b) \quad \begin{aligned} \frac{dx}{dt} &= -8x + 3y \\ \frac{dy}{dt} &= 2x - 13y \end{aligned}$$

$$(c) \quad \begin{aligned} \frac{dx}{dt} &= x + 4y \\ \frac{dy}{dt} &= -3x - y \end{aligned}$$

$$(d) \quad \begin{aligned} \frac{dx}{dt} &= 4x + 2y \\ \frac{dy}{dt} &= 2x + y \end{aligned}$$

$$(e) \quad \begin{aligned} \frac{dx}{dt} &= -\frac{x}{2} \\ \frac{dy}{dt} &= x - \frac{y}{2} \end{aligned}$$

$$(f) \quad \begin{aligned} \frac{dx}{dt} &= 2x + y \\ \frac{dy}{dt} &= -x + 4y \end{aligned}$$

$$(g) \quad \begin{aligned} \frac{dx}{dt} &= -3x - 5y \\ \frac{dy}{dt} &= 3x + y \end{aligned}$$

$$(h) \quad \begin{aligned} \frac{dx}{dt} &= -3x + 4y \\ \frac{dy}{dt} &= 6x - 5y \end{aligned}$$