1. Consider the ODE $x'' - x' + 2x = 0$. Which of the following best describes the phase portrait of the system

$$\frac{d\vec{x}}{dt} = A\vec{x}, \text{ where } \vec{x} = \begin{bmatrix} x \\ x' \end{bmatrix}?$$

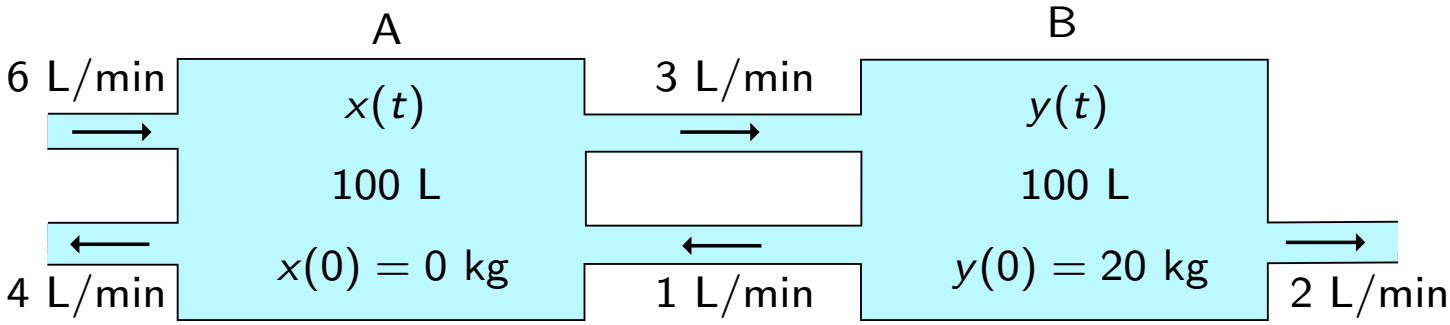
(A) Source

(B) Sink

(C) Saddle

(D) None of the above

Remember these interconnected salt-water tanks...?



2. Which of the following best describes the phase portrait of the first order system that describes dx/dt and dy/dt in terms of x and y?

(A) Source

(B) Sink

(C) Saddle

(D) None of the above