

## State Estimation Using an Observer

If the system is **observable**, the state estimate  $\hat{x}$  is *asymptotically accurate*:

$$\|\hat{x}(t) - x(t)\| = \sqrt{\sum_{i=1}^n (\hat{x}_i(t) - x_i(t))^2} \xrightarrow{t \rightarrow \infty} 0$$

If we are successful, then we can try **estimated state feedback**:

