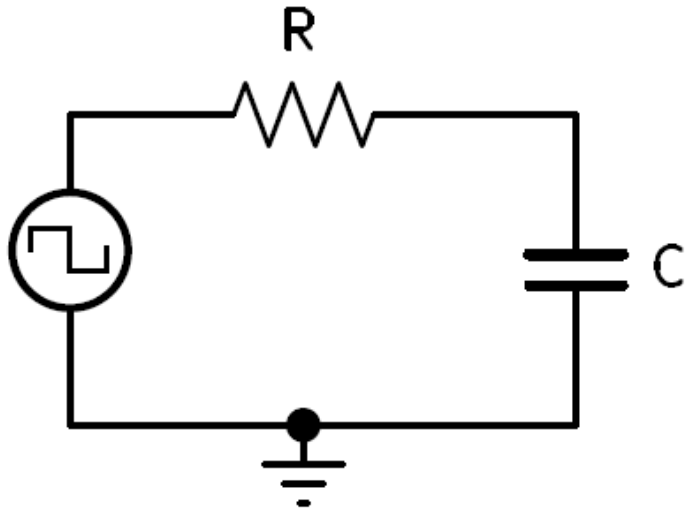
Consider the following circuit:



Integration (think averaging!)

- "Integration is the summation of area." (Bell p.50)
- There is not enough time for the capacitor to fully charge or discharge.
  1. PW or PS is less than 5τ.
  2. "An integrating circuit is an RC circuit with the output taken across the capacitor and $RC \geq (10 \times PW)$"(Bell p.53)
  3. The standard formulas for designing an Integrating RC circuit is:
     - $\boldsymbol{RC = \tau}$
     - $50\%\ DC,\ PW = PS$
     - $PW = Time\ to\ charge, PS = Time\ to\ discharge$
     - $\boldsymbol{RC \geq (10 \times PW)}$ (Integration in terms of τ)
     - $\boldsymbol{Time = \frac{1}{10}\tau}$ (Integration formula in terms of Time, not enough Time to charge or discharge)
  4. Additional formulas (derived previously):
     - $\boldsymbol{\#of\ cycles? = \frac{5\tau}{Period}}$(cycles)(stabilization)
     - $\boldsymbol{Vmax = \frac{Vgen_{+}}{1+e^{\frac{-t}{RC}}}}$
     - $\boldsymbol{Vmin = Vgen_{+} - Vmax}$

See Image:

a) Is **not** an Integrator, the capacitor is fully charging and discharging.
b) Is **not** an Integrator, $\tau =$ PW. 63% charge and discharge
c) Is an **Integrator,** Vmax and Vmin will alternate minimally equal distance above and below the average input generator voltage.