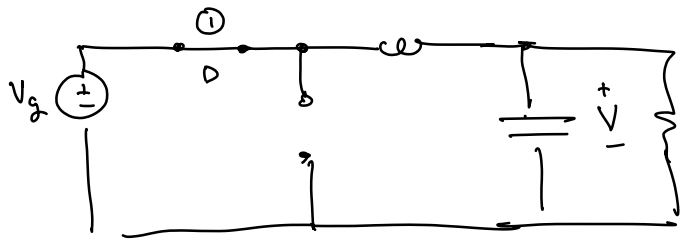
— Exam Review

$$v_L = L\frac{di}{dt} \longrightarrow v_L \approx L\frac{2\Delta i_L}{\Delta t} \quad (1)$$

evaluate in either config ① or ②

Ex: Buck in config ①



Eq (1) For config ①

$$V_g - V = L\frac{2\Delta i_L}{DT_s} = L\frac{2\Delta i_L f_s}{D}$$

where $\Delta i_L = X\,I$

X % value

- General Strategy for Problem Solving

→ How to start solving <u>any</u> problem?

<u>Step 1</u> • Begin by writing "golden equations" which always hold true.

all golden eqns

- $v_L = L\frac{di}{dt}$, $i_c = C\frac{dv}{dt}$
- $v_L = L\frac{2\Delta i}{\Delta t}$, $i_c = C\frac{2\Delta v}{\Delta t}$

MOST IMPT!

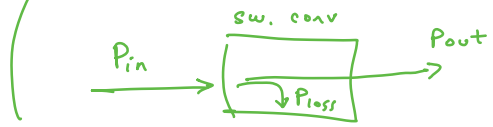
- Balance eqns

start here →

$$\langle v_L \rangle = 0 = D(\text{config } ①) + D'(\text{config } ②)$$

$$\langle i_c \rangle = 0 = D \text{ '' } \text{ '' }$$

- $\eta = \frac{P_{out}}{P_{in}}$



$$P_{in} = P_{out} + P_{loss}$$

<u>Step 2</u> • Take stock of "knowns" and "unknowns" & # of alg eqns.

same #

Step 3 • Solve for what is missing & apply understand of fundamentals.