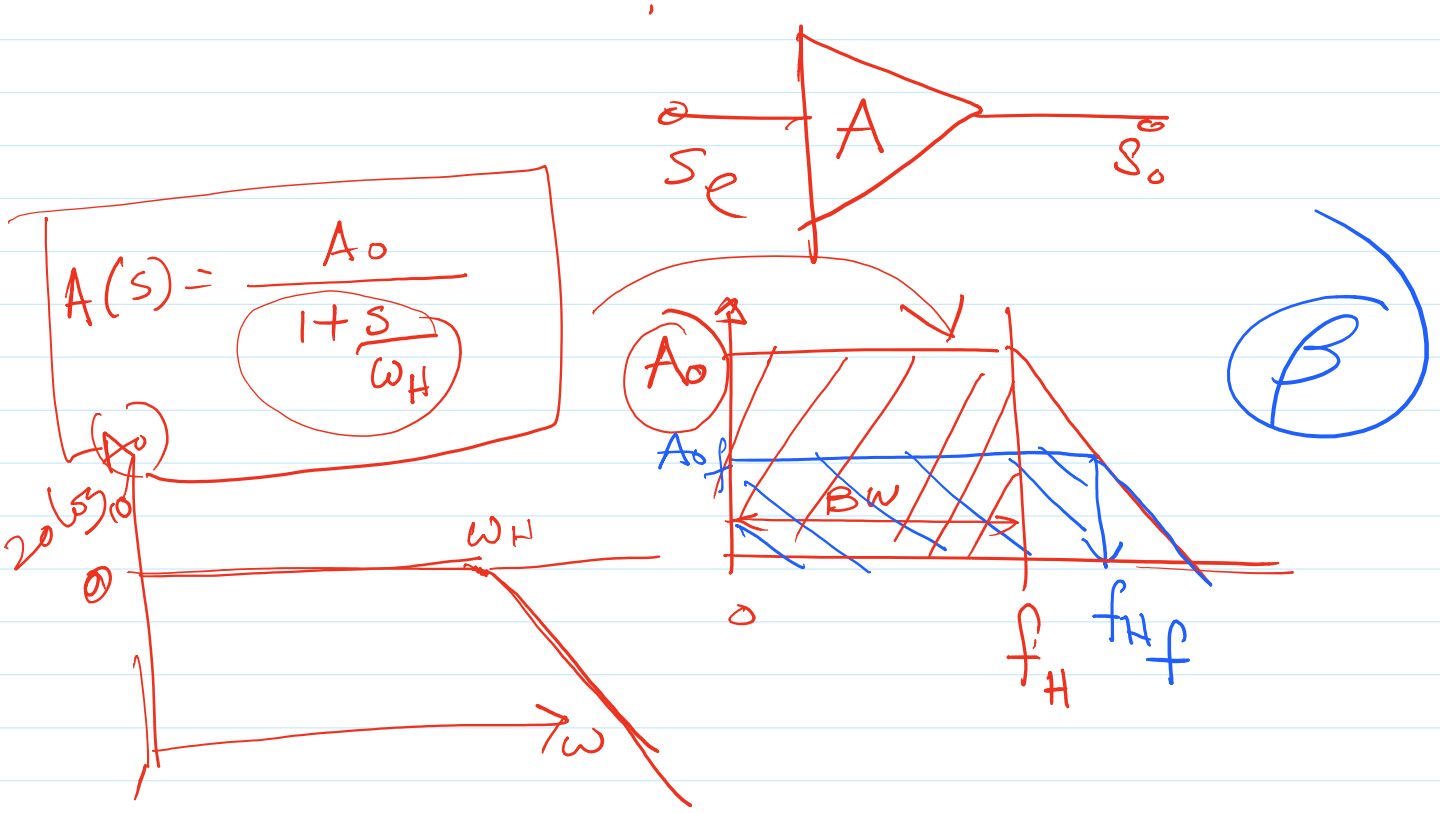
Feedback

Thursday, April 13, 2017 2:00 PM



$$A_f = \frac{A}{1+\beta A}$$

$$= \frac{\frac{A_0}{\left(1+\frac{s}{\omega_H}\right)}}{1+\beta\frac{A_0}{\left(1+\frac{s}{\omega_H}\right)}}$$

$$\frac{\frac{1}{10+s}}{10\left[1+\frac{s}{10}\right]} = \frac{A_0}{\left(1+\frac{s}{\omega_H}\right)+\beta A_0}$$

$$= \frac{A_0}{\left[(1+\beta A_0) + \frac{s}{\omega_H}\right]}$$

$$= \frac{A_0}{(1+\beta A_0)\left[1 + \frac{s}{\omega_H(1+\beta A_0)}\right]}$$

$$= \frac{A_{of}}{1 + \frac{s}{\omega_{Hf}}}$$

$$\omega_{Hf} = \omega_H (1+\beta A_0)$$

$$\boxed{f_{Hf} = f_H (1+\beta A_0)}$$

$$A_{of} \times f_{Hf} = \frac{A_0}{1+\beta A_0} \times f_H (1+\beta A_0)$$

$$A_{of} \times f_{Hf} = A_0 f_H$$

$$= \text{Gain} \times \text{BW} = K$$

$A_{of} = 10, \quad \beta = 0.9$

Find open loop gain

find closed loop bandwidth

if open loop BW is 100Hz

$$A_f = \frac{A}{1+\beta A}$$

$$f_{Hf} = (1+\beta A) f_H$$