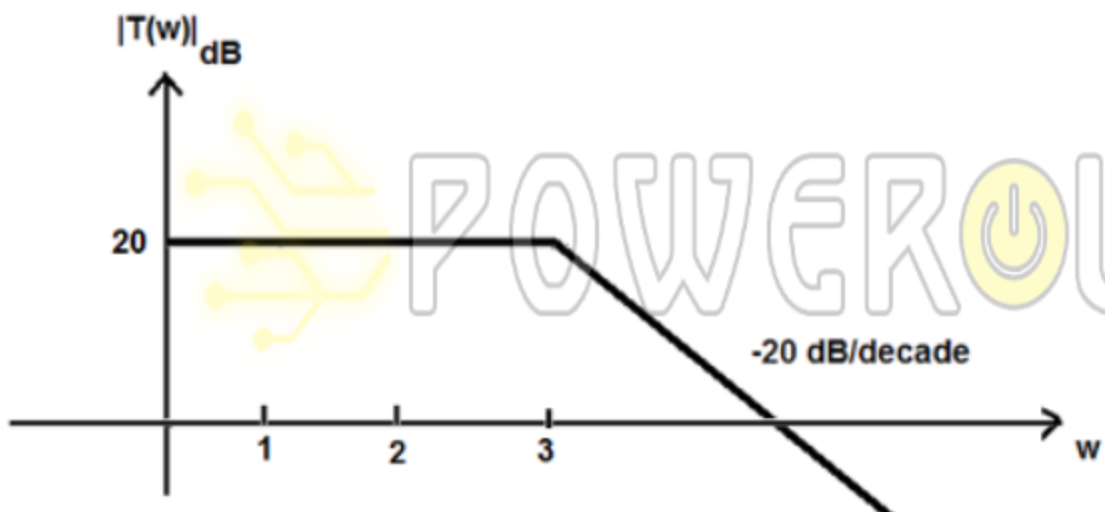
Question 1/4 (3 p.) Answer is mandatory

Consider the Bode plot of a transfer function shown in the following and then find the expression of the transfer function.

** Note that the x-axis is the angular frequency w and s = jw



Question 2/4 (3 p.) Answer is mandatory

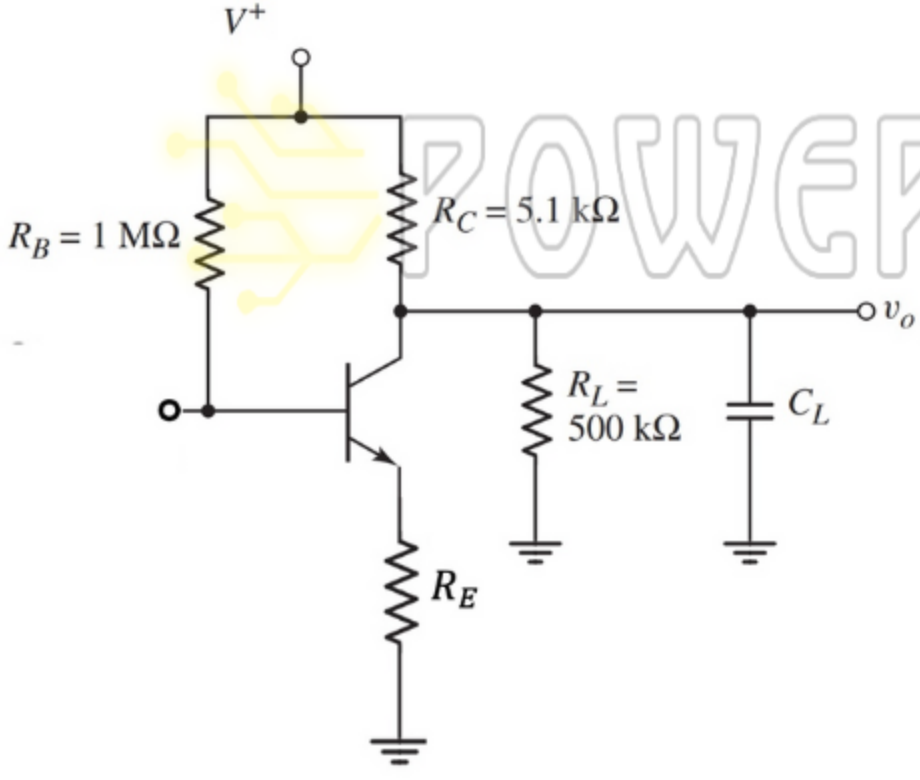
The parameters of the transistor in the circuit in the Figure are β = 100, V_{BE}(on) = 0.7 V, and V_A =30V.

Assume RE = 0Ω, and C_L = 10pF.

The collector current is calculated for you I_{CQ}=30mA.

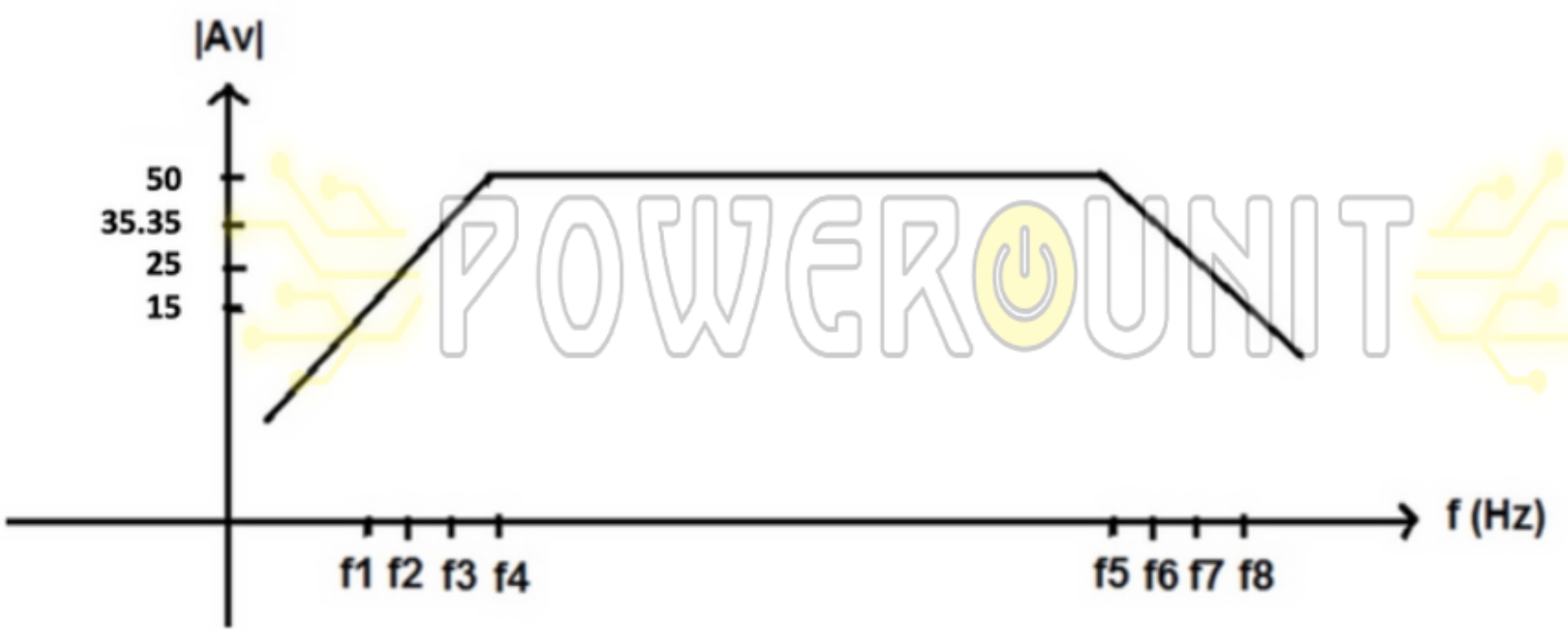
Neglect the capacitance effects of the transistor.

Then the cutoff frequency is approximately:



Question 3/4 (2 p.) Answer is mandatory

Consider the transfer function of an amplifier shown in the Figure, and then find the bandwidth BW of this amplifier.



Question 4/4 (2 p.) Answer is mandatory

Consider the circuit shown in the Figure, find the 3dB cut-off frequency for it in which C_C = 0.5μF, given that Kn=2 mA/V^2 , V_{TN}=1V, λ=0 V^{-1}, and g_m=2mA/V.