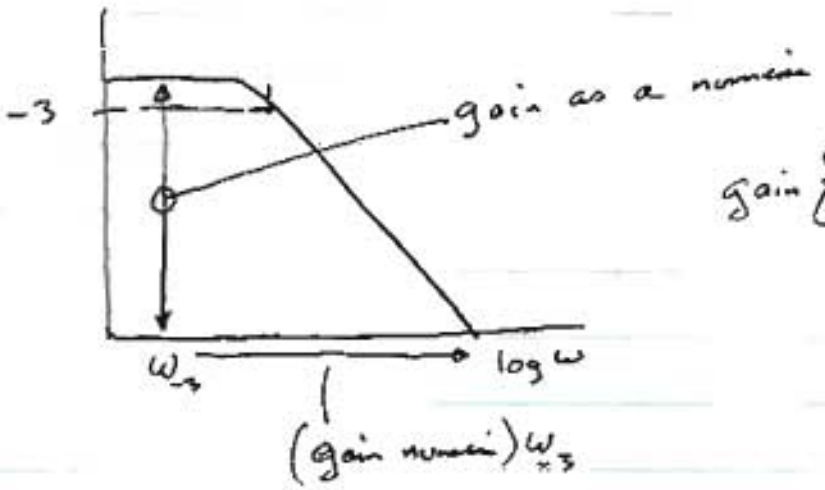
Reviewing Exam #1

$$V_T = V_1 + V_2 + V_3$$
$$R_T = R_1 + R_2 + R_3$$

$$\frac{V_1}{V_T} = \frac{R_1}{R_T} \qquad \frac{V_1 + V_2}{V_T} = \frac{R_1 + R_2}{R_T}$$

Gain-Bandwidth Product = const



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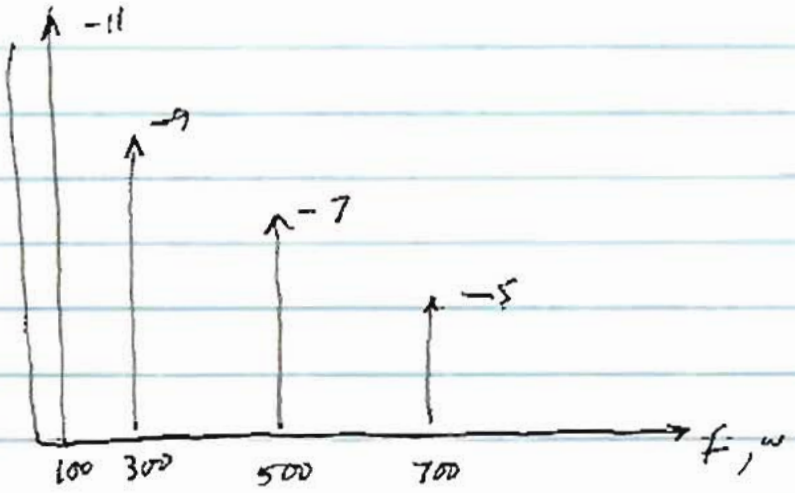


$\frac{700}{500} = \frac{7}{5}$ irreducible

$\frac{70}{50}$

100 300 500 700
1 $\frac{1}{3}$ $\frac{1}{5}$ $\frac{1}{7}$

$\frac{1}{n}$

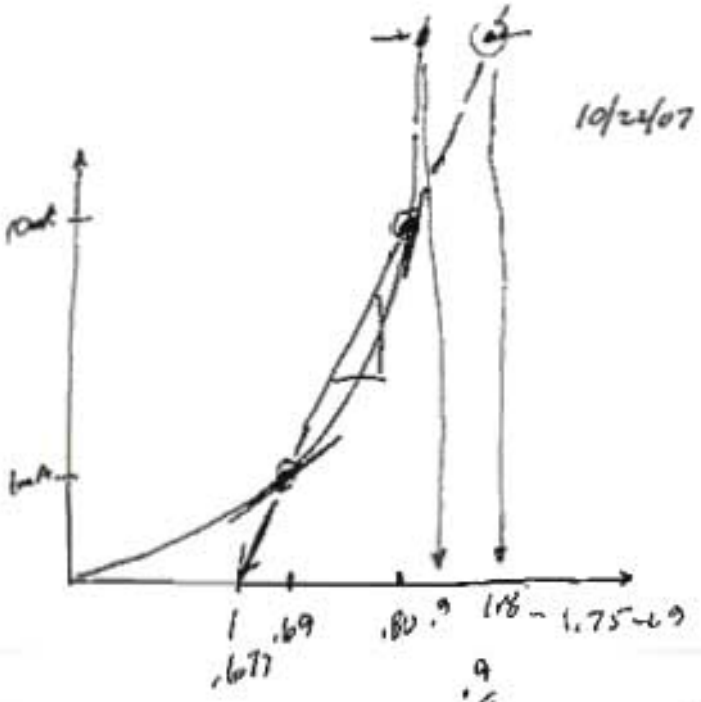
35 V p

$\frac{V_e}{\sqrt{2}}$ 24.75

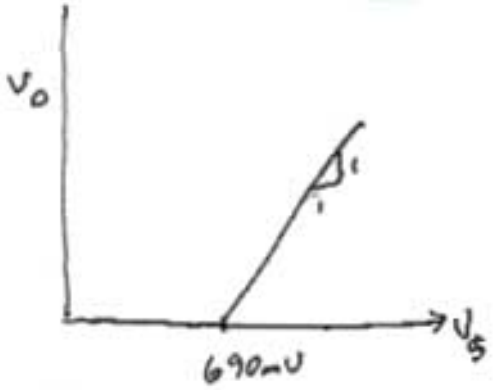
$\frac{4V}{\pi} = 35$

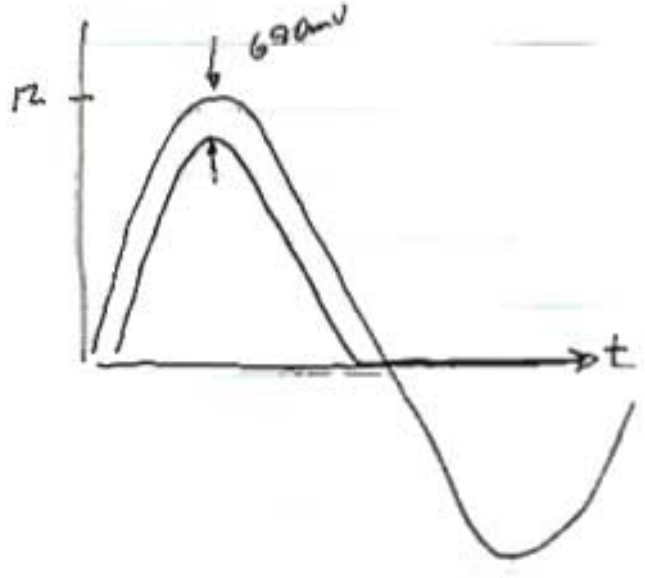
$2V = \frac{35\pi}{4}$ pp

55 pp



$I_S e^{\frac{V}{nV_T}}$ — .025 .026 .0255

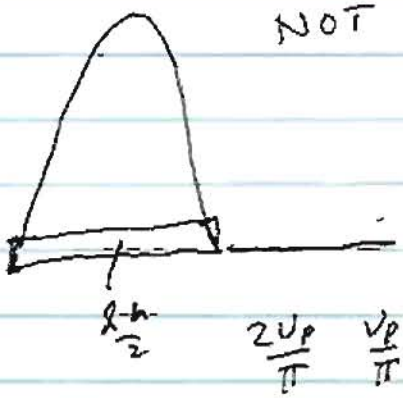




$$V_{AVG} \approx \frac{V_p}{\pi} - \frac{V_{DD}}{2} = \text{a number}$$

=

NOT sinusoidal



$$ax^2 + bx + c = 0$$

$I_D = (\quad)($ $\frac{1}{2}K_n($ 5.

$V_{GS} - V_t$

$V_{GS} = V_G - V_S$

$= V_G - I_D R_S$

$I_D = \left((V_G - V_t) - I_D R_S\right)^2$

I_D ↑ Can +5 →

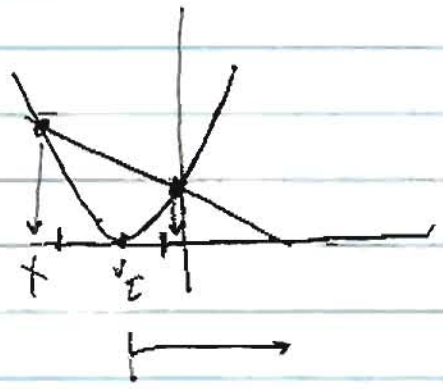
$0 \equiv$

5.1 , 6.4

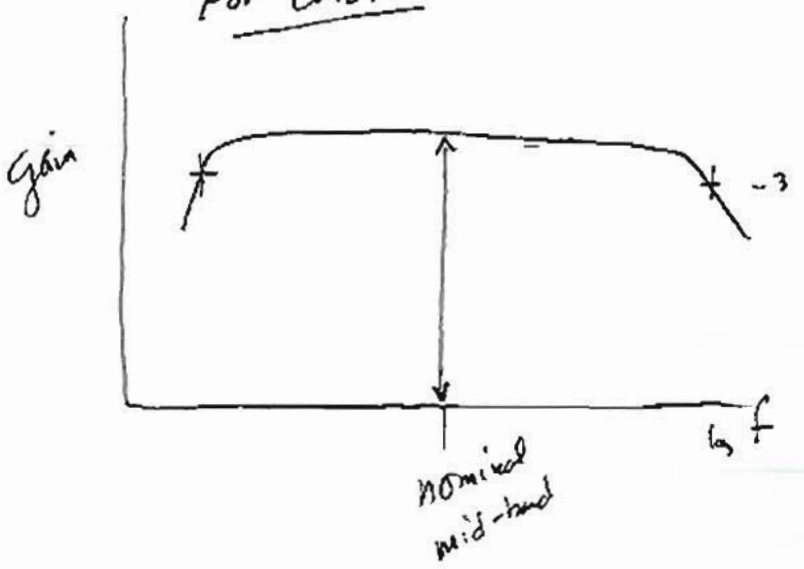
$V_S = 6.4\text{V}$ $1.4 = 7.8$

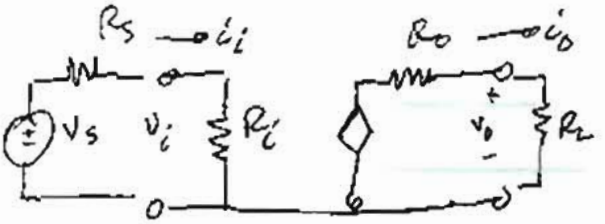
$V_G = 7.13$

$V_G > 7.8$



For CAD#3

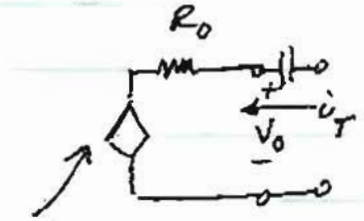




$$V\ Gain = \frac{V_o}{V_i}$$

$$R_i = \frac{V_i}{i_i} \quad \text{by } t$$

$$\frac{V_o}{i_o} \neq R_o \quad !!$$
$$\frac{V_o}{i_o} = R_L$$



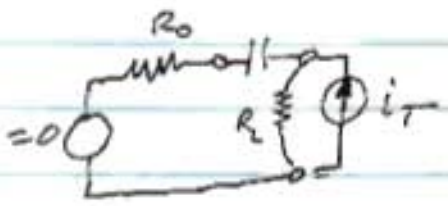
Remove R_L, Enable CCO

i_T = test current

make = 0

$$R_o = \frac{V_o}{i_T}$$

Quirk in pspice.



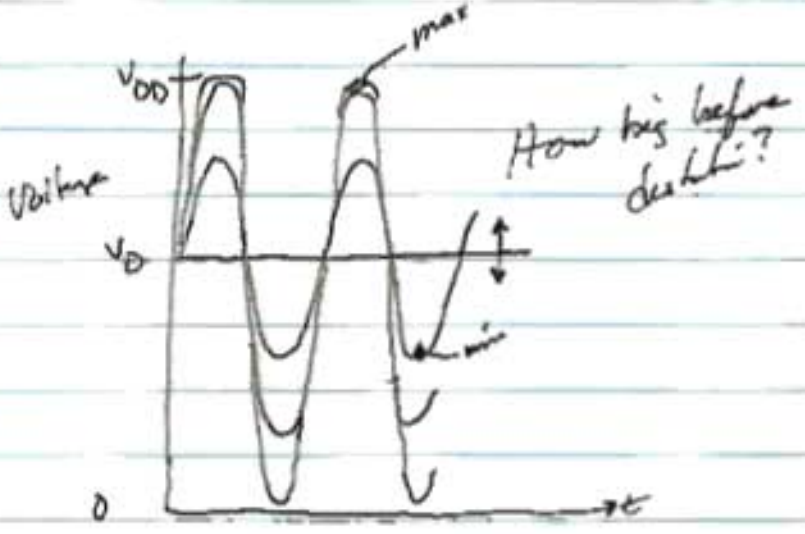
error occurs

$R_L \to \infty$

$R_L = 1E8$

$R_0 < 2k$

R_L from 5k to 1E8 for R_0 test.



10%

T.H.D. 9.96%

10.05%

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