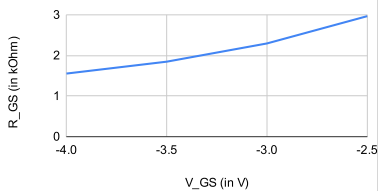


Part 1

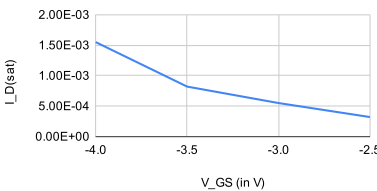
For R<sub>GS</sub>, I took the rightmost point of the V<sub>d</sub>s/I<sub>d</sub>s curves

V <sub>GS</sub> (in V)	R <sub>GS</sub> (in kOhm)	I <sub>D</sub> (sat)	R <sub>O</sub>
-4	1.551	1.55E-03	2.08E+04
-3.5	1.844	8.20E-04	3.90E+04
-3	2.293	5.50E-04	5.87E+04
-2.5	2.965	3.20E-04	8.78E+04

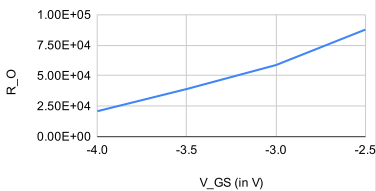
R<sub>GS</sub> (in kOhm) vs. V<sub>GS</sub> (in V)



I<sub>D</sub>(sat) vs. V<sub>GS</sub> (in V)



R<sub>O</sub> vs. V<sub>GS</sub> (in V)



For Early Voltage (V<sub>A</sub>) and R<sub>O</sub>

$R_O = V_A / I_D(\text{sat})$

V<sub>GS</sub> = -2.5V

x0	-2.17273	y0	-0.000298611	slope	0.000009865049	I <sub>D</sub> (sat)	3.20E-04
x1	-4.00303	y1	-0.000316667	y-intercept	-0.000277176911	R <sub>O</sub>	8.78E+04
				x-intercept	28.09685979	V <sub>A</sub>	

V<sub>GS</sub> = -3V

x0	-2.72424	y0	-0.000515278	slope	0.000014728981	I <sub>D</sub> (sat)	5.50E-04
x1	-4.32727	y1	-0.000538889	y-intercept	-0.000475152711	R <sub>O</sub>	5.87E+04
				x-intercept	32.25971207	V <sub>A</sub>	

V<sub>GS</sub> = -3.5V

x0	-2.90909	y0	-0.000781944	slope	0.000022396853	I <sub>D</sub> (sat)	8.20E-04
x1	-4.64545	y1	-0.000820833	y-intercept	-0.000716789531	R <sub>O</sub>	3.90E+04
				x-intercept	32.00402898	V <sub>A</sub>	

V<sub>GS</sub> = -4V

x0	-3.35758	y0	-0.00111528	slope	0.000031378339	I <sub>D</sub> (sat)	1.55E-03
x1	-4.59697	y1	-0.00115417	y-intercept	-0.001009924711	R <sub>O</sub>	2.08E+04
				x-intercept	32.18540995	V <sub>A</sub>	

Part 2

K = u<sub>n</sub>C<sub>ox</sub>(W/L) Linear Region

x0	-3.61846	y0	0.000108431	slope	4.20E-05	g <sub>m</sub>	
x1	-1.96308	y1	4.20E-05	y-intercept	-3.69E-05		
				x-intercept	-0.82	V <sub>T</sub>	

Saturation Region

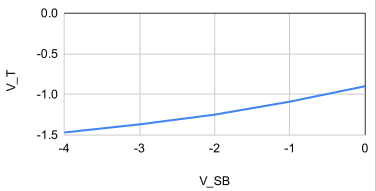
x0	-3.90909		For K,	Slope = 0.0107	x0 = -4.13636, y0 = 0.00126582	x1 = -4.11818, y1 = 0.00125316
y0	0.00109873		K = (Slope) <sup>2</sup> *2	0.00022898	dx = 0.0181818, dy = -1.26582e-05	
			V <sub>T</sub> = -0.82		dy/dx = -0.000696203	dx/dy = -1436.36

g<sub>m</sub> 6.96E-05

Part 3

V <sub>SB</sub>	V <sub>T</sub>
0	-0.9
-1	-1.09
-2	-1.25
-3	-1.37
-4	-1.47

V<sub>T</sub> vs. V<sub>SB</sub>



gamma = -0.463