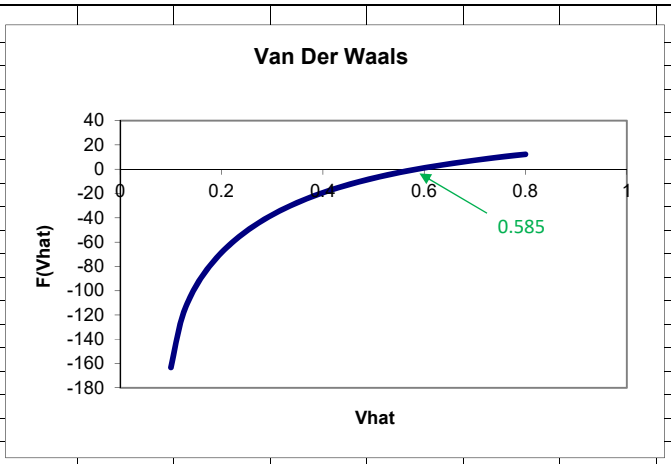
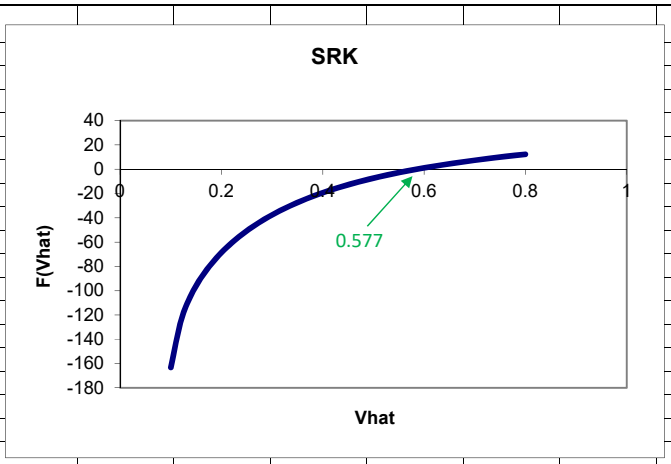
Van der Waals Example for CO2

Tc	304.2	K		
Pc	72.9	atm		
R	0.08206	L-atm/K-mol		
a=	3.606099507			
b=	0.042802901			
P=	50	atm		
T=	400	K		
V_ideal	0.65648	L/mol	Non-Ideal!	(V<20 L/mol)
V_VDW	0.5850			
f(V) = RHS-LHS			V	f(V)
f(V)=	4.76177E-07		0.1	-163.2653106
			0.12	-124.7737495
			0.14	-103.7208844
			0.16	-89.21193052
			0.18	-77.94767412
			0.2	-68.65543726
			0.22	-60.73386502
			0.24	-53.84685891
			0.26	-47.78073996
			0.28	-42.38663838
			0.3	-37.55419605
			0.32	-33.19812226
			0.34	-29.25059109
			0.36	-25.65655858
			0.38	-22.37067251
			0.4	-19.35512165
			0.42	-16.57807681
			0.44	-14.01252586
			0.46	-11.63538254
			0.48	-9.426792271
			0.5	-7.36958336
			0.52	-5.448828073
			0.54	-3.65148795
			0.56	-1.96612473
			0.58	-0.382662928
			0.6	1.107806484
			0.62	2.513189434
			0.64	3.84052544
			0.66	5.096102594
			0.68	6.285554759
			0.7	7.413944109
			0.72	8.485831521
			0.74	9.505336854
			0.76	10.47619077
			0.78	11.40177942
			0.8	12.28518319

$$P = \frac{RT}{\hat{V} - b} - \frac{a}{\hat{V}^2}$$



SRK Example for CO2

Tc	304.2	K		Non-Ideal!
Pc	72.9	atm		
R	0.08206	L-atm/K-mol		
a=	3.6539244			
b=	0.029667547			
omega=	0.225			
m=	0.826312188			
Tr=	1.314924392			
alpha=	0.772252075			
P=	50	atm	V	f(V)
T=	400	K	0.1	-199.0835261
V_ideal	0.65648	L/mol	0.12	-156.2567106
V_SRK	0.601091994		0.14	-128.7075963
f(V) = RHS-LHS			0.16	-108.8648035
f(V)=	1.40758E-07		0.18	-93.57488675
			0.2	-81.27429472
			0.22	-71.08326463
			0.24	-62.45848587
			0.26	-55.04035614
			0.28	-48.57808357
			0.3	-42.88958824
			0.32	-37.83844341
			0.34	-33.31981657
			0.36	-29.25147502
			0.38	-25.56779761
			0.4	-22.21565303
			0.42	-19.15148249
			0.44	-16.33918506
			0.46	-13.74855327
			0.48	-11.35409518
			0.5	-9.1341336
			0.52	-7.070107801
			0.54	-5.146025642
			0.56	-3.348028949
			0.58	-1.664045389
			0.6	-0.08350712
			0.62	1.402878445
			0.64	2.80331681
			0.66	4.125081923
			0.68	5.374645534
			0.7	6.557785437
			0.72	7.679676528
			0.74	8.744967815
			0.76	9.757847849
			0.78	10.72210058
			0.8	11.64115322

$$P = \frac{RT}{\hat{V} - b} - \frac{a\alpha}{\hat{V}\left(\hat{V} + b\right)}$$