Problem8.6

D(lower)	D(upper)	Dpg*	ΔDp	ΔlogDp	ΔNi	ΔNi/ΔDpi	ΔNi/NΔDpi	ΔNi/ΔlogDpi	ΔNi/NΔlogDpi	ΔSi/ΔDpi	Si	ΔSi/SΔDpi	ΔSi/ΔlogDpi	ΔSi/SΔlogDpi	ΔMi/ΔDpi	Mi	ΔMi/MΔDpi	ΔMi/ΔlogDpi	ΔMi/MΔlogDpi	Arithmetic mean	Geometric mean	Geometric standard deviation of the
um	um	um	um	unitless	# cm-3	um-1 cm-3	um-1	cm-3	unitless	um cm-3	um2 cm-3	um-1	um2 cm-3	unitless	ug m-3 um-1	ug m-3	um-1	ug m-3	unitless			
0.10	0.20	0.14	0.10	0.30	50.00	500.00	9.91E-02	166.10	0.0329	31.40	3.14	7.23E-04	10.43	2.40E-04	1.11E+00	1.11E-01	2.97E-05	3.69E-01	9.87E-06	7.07107	0.9808	
0.20	0.40	0.28	0.20	0.30	460.00	2300.00	4.56E-01	1528.09	0.3030	578.05	115.61	1.33E-02	384.05	8.84E-03	4.09E+01	8.17E+00	1.09E-03	2.72E+01	7.27E-04	130.108	0.89121	
0.40	0.70	0.53	0.30	0.24	1055.00	3516.67	6.97E-01	4340.88	0.8606	3093.43	928.03	7.12E-02	3818.45	8.79E-02	4.09E+02	1.23E+02	1.10E-02	5.05E+02	1.35E-02	558.254	0.87535	
0.70	1.00	0.84	0.30	0.15	980.00	3266.67	6.48E-01	6326.58	1.2543	7183.79	2155.14	1.65E-01	13912.91	3.20E-01	1.50E+03	4.51E+02	4.02E-02	2.91E+03	7.79E-02	819.927	0.96594	
1.00	2.00	1.41	1.00	0.30	1705.00	1705.00	3.38E-01	5663.89	1.1229	10712.86	10712.86	2.47E-01	35587.34	8.19E-01	3.79E+03	3.79E+03	1.01E-01	1.26E+04	3.37E-01	2411.23	1.12429	
2.00	4.00	2.83	2.00	0.30	680.00	340.00	6.74E-02	2258.91	0.4478	8545.15	17090.30	1.97E-01	56772.76	1.31E+00	6.04E+03	1.21E+04	1.62E-01	4.01E+04	1.07E+00	1923.33	1.15047	
4.00	7.00	5.29	3.00	0.24	102.00	34.00	6.74E-03	419.69	0.0832	2990.80	8972.41	6.89E-02	36917.72	8.50E-01	3.96E+03	1.19E+04	1.06E-01	4.88E+04	1.31E+00	539.733	1.03427	
7.00	10.00	8.37	3.00	0.15	10.00	3.33	6.61E-04	64.56	0.0128	733.04	2199.12	1.69E-02	14196.85	3.27E-01	1.53E+03	4.60E+03	4.10E-02	2.97E+04	7.95E-01	83.666	1.00422	
10.00	20.00	14.14	10.00	0.30	2.00	0.20	3.97E-05	6.64	0.0013	125.66	1256.64	2.89E-03	4174.47	9.61E-02	4.44E+02	4.44E+03	1.19E-02	1.48E+04	3.95E-01	28.2843	1.00105	
		*Okay if you use arithmetic mean here for average size			**5044**						**43433**					**37366**				**1.289**	**0.994**	2.05646452

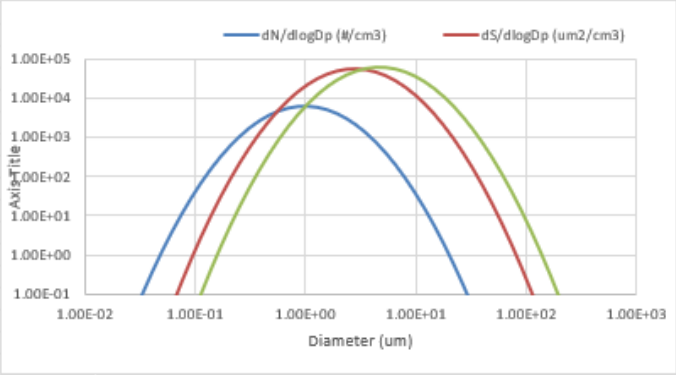
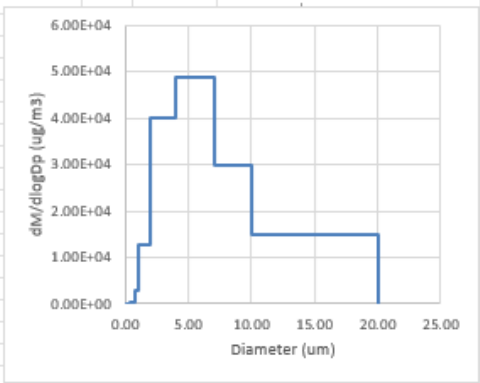
Continuous log-normal distributions

$$n_N^c(\ln D_p) = \frac{dN}{d\ln D_p} = \frac{N_t}{(2\pi)^{1/2}\ln\sigma_g}\exp\left(-\frac{(\ln D_p - \ln \bar{D}_{pg})^2}{2\ln^2\sigma_g}\right) \qquad (8.33)$$

$$\bar{D}_p = \bar{D}_{pg}\exp\left(\frac{\ln^2\sigma_g}{2}\right) \qquad (8.44)$$

dN/dlogDp | ln --> log

Dp (um)	Dp (um)	dN/dlogDp (#/cm3)	dS/dlogDP (um2 cm-3)	dM/dlogDP (ug m-3)
1.00E-02	1.00E-02	9.40E-06	2.95E-09	8.85E-12
1.50E-02	1.50E-02	2.90E-04	2.05E-07	9.22E-10
2.25E-02	2.25E-02	6.52E-03	1.04E-05	7.00E-08
3.38E-02	3.38E-02	1.07E-01	3.82E-04	3.87E-06
5.06E-02	5.06E-02	1.28E+00	1.03E-02	1.56E-04
7.59E-02	7.59E-02	1.11E+01	2.01E-01	4.58E-03
1.14E-01	1.14E-01	7.05E+01	2.87E+00	9.82E-02
1.71E-01	1.71E-01	3.26E+02	2.99E+01	1.53E+00
2.56E-01	2.56E-01	1.10E+03	2.27E+02	1.74E+01
3.84E-01	3.84E-01	2.70E+03	1.25E+03	1.45E+02
5.77E-01	5.77E-01	4.84E+03	5.05E+03	8.74E+02
8.65E-01	8.65E-01	6.32E+03	1.48E+04	3.85E+03
1.30E+00	1.30E+00	6.01E+03	3.18E+04	1.24E+04
1.95E+00	1.95E+00	4.17E+03	4.96E+04	2.90E+04
2.92E+00	2.92E+00	2.11E+03	5.64E+04	4.94E+04
4.38E+00	4.38E+00	7.77E+02	4.68E+04	6.14E+04
6.57E+00	6.57E+00	2.09E+02	2.83E+04	5.57E+04
9.85E+00	9.85E+00	4.08E+01	1.24E+04	3.68E+04
1.48E+01	1.48E+01	5.82E+00	3.99E+03	1.77E+04
2.22E+01	2.22E+01	6.05E-01	9.34E+02	6.21E+03
3.33E+01	3.33E+01	4.59E-02	1.59E+02	1.59E+03
4.99E+01	4.99E+01	2.53E-03	1.98E+01	2.96E+02
7.48E+01	7.48E+01	1.02E-04	1.79E+00	4.03E+01
1.12E+02	1.12E+02	2.99E-06	1.18E-01	3.99E+00
1.68E+02	1.68E+02	6.41E-08	5.70E-03	2.88E-01
2.53E+02	2.53E+02	9.99E-10	2.00E-04	1.51E-02
3.79E+02	3.79E+02	1.13E-11	5.11E-06	5.81E-04



Dp	ΔMi/ΔlogDpi ug m-3
0.10	1.00E-10
0.10	3.69E-01
0.20	3.69E-01
0.20	2.72E+01
0.40	2.72E+01
0.40	5.05E+02
0.70	5.05E+02
0.70	2.91E+03
1.00	2.91E+03
1.00	1.26E+04
2.00	1.26E+04
2.00	4.01E+04
4.00	4.01E+04
4.00	4.88E+04
7.00	4.88E+04
7.00	2.97E+04
10.00	2.97E+04
10.00	1.48E+04
20.00	1.48E+04
20.00	1.00E-10