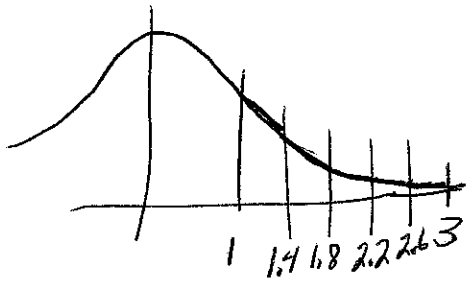


Answers Practice Final

#788 Just to vary it from what we did in class, suppose we wanted $\int_1^3 \frac{1}{\sqrt{z}} e^{-z/2} dz$ & let us use 5 boxes.



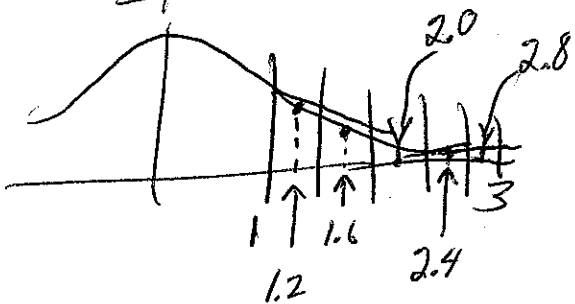
base = 0.4

z	f(z)	trap #	average height	area
1.0	0.24197072	1	0.19585	0.07834
1.4	0.14972747	2	0.11434	0.04574
1.8	0.07895016	3	0.05721	0.02288
2.2	0.03547459	4	0.02453	0.009811
2.6	0.01358297	5	0.009007	0.003603
3.0	0.004431848			

Total Area sum the five trapezoids: 0.160374589

Using $\ln \int$, the true answer is 0.1573053559
 so the error is 0.0030692331 so ~~relative~~ error is 0.0195 \approx 2% error.

Midpoint Rule



base = 0.4

z	f(z)	area using midpoint height
1.2	0.194186	0.07767
1.6	0.110921	0.04437
2.0	0.053991	0.02160
2.4	0.022395	0.00896
2.8	0.007915	0.00317

Total area sum these five areas = 0.1557631352

So error is -0.0015422207 so relative error is -0.0099 \approx 1%.

Finally Simpson's = $\frac{1}{3}(2M+T)$
 = 0.1573002865 less than 0.0033%.