Chapter 6

1. LS(100) = .306069952038, RS(100) = .314484661886, TRAP(100) = .310277306962, MID(100) = .310263799029, SIMP(100) = .310268301673.

2. (a) I is exactly $-\frac{1}{8\ln 2}+\frac{1}{2\ln 2}$.

   (b) **fnInt**(2^−x, x, 1, 3) gives .541010640333.

   (c) RS(50) = .533545297248.

   (d) (1/25)**sum seq**(2^−(1+K/25), K, 1, 50, 1) also gives .533545297248.

3. The two areas are equal since $\int_0^{\pi/2} 2\sin 2x\,dx = \int_0^{\pi} \sin\theta\,d\theta$ using the substitution $\theta = 2x$.

4. (a) **seq**(**fnInt**($1/x^2$, x, 1, K), K, 100, 1000, 100) with **tol** = 1×10^{-5} will generate the list {.990000000037, .995000000056, .996666666751, .997500000067, .998000000058, .998333333424, .998571428652, .998750000072, .998888888955, .999000000062}.

   (b) 1.48687910268E−6.

5. Take $y1$ = **fnInt**(x^sin x − 0.8, x, 0, x) + 0.2. Set **tol** = .01 to speed up the graphing and then graph $y1$ on the window [0, 1, .5] × [−1, 2, 1].

6. Computing **nDer**(sin(**fnInt**(√(t^3 + 1), t, 0, x)), x, 1.7) gives a negative result, so the graph is decreasing at x = 1.7.