Calculus I
Section 5.5 – Reimann Sums Function

1. Approximate the area between the curve $y = \frac{1}{x}$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [1, 5], LRAM, $n = 4$

   b. [1, 5], RRAM, $n = 4$

   c. [1, 5], TRAP, $n = 8$

   d. [1, 4], LRAM, $n = 6$

   e. [1, 4], RRAM, $n = 6$

   f. [1,4], TRAP, $n = 3$

2. Approximate the area between the curve $y = \sqrt{x}$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [0, 5], LRAM, $n = 5$

   b. [0, 5], RRAM, $n = 5$

   c. [0, 5], TRAP, $n = 5$

   d. [1, 4], LRAM, $n = 6$

   e. [1, 4], RRAM, $n = 6$

   f. [1, 4], TRAP, $n = 3$

3. Approximate the area between the curve $y = 1 - x^2$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [0, 2], LRAM, $n = 4$

   b. [0, 2], RRAM, $n = 4$

   c. [0, 2], TRAP, $n = 4$

   d. [0, 4], LRAM, $n = 4$

   e. [0, 4], RRAM, $n = 4$

   f. [0, 4], TRAP, $n = 8$

4. Approximate the area between the curve $y = 2^x$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [–2, 2], LRAM, $n = 4$

   b. [–2, 2], RRAM, $n = 4$

   c. [–2, 2], TRAP, $n = 8$

   d. [0, 3], LRAM, $n = 6$

   e. [0, 3], RRAM, $n = 6$

   f. [0, 3], TRAP, $n = 3$

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Section 5.5 – Reimann Sums Function

1. Approximate the area between the curve $y = \frac{1}{x}$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [1, 5], LRAM, $n = 4$ $1(1 + 1/2 + 1/3 + 1/4) = 2.0833$

   b. [1, 5], RRAM, $n = 4$ $1(1/2 + 1/3 + 1/4 + 1/5 = 1.2833$

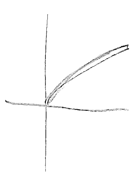
   c. [1, 5], TRAP, $n = 8$ $\frac{1}{2}\cdot\frac{1}{2}(1 + 2(2/3) + 2(.5) + 2(.4) + 2(1/3) + 2(.28571) + 2(.25) + 2/9)$
   $= 1.5234$

   d. [1, 4], LRAM, $n = 6$ $\frac{1}{2}(1 + 2/3 + .5 + .4 + 1/3 + .28571) = 1.5928$

   e. [1, 4], RRAM, $n = 6$ $\frac{1}{2}(2/3 + .5 + .4 + 1/3 + .28571 + 1/4) = 1.217855$

   f. [1,4], TRAP, $n = 3$ $\frac{1}{2}(1)(1 + 2\cdot\frac{1}{2} + 2\cdot\frac{1}{3} + .25) = 1.4583$

2. Approximate the area between the curve $y = \sqrt{x}$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.



   a. [0, 5], LRAM, $n = 5$ $1(0 + 1 + 1.4142 + 1.7321) = 4.1463$
   $\Delta x = 1$

   b. [0, 5], RRAM, $n = 5$ $1(1 + 1.4142 + 1.7321 + 2) = 6.1463$
   $\Delta x = 1$

   c. [0, 5], TRAP, $n = 5$ $\frac{1}{2}(1)(0 + 2(1) + 2(1.4142) + 2(1.7321) + 2) = 5.8733$
   $\Delta x = 1$

   d. [1, 4], LRAM, $n = 6$ $\frac{1}{2}(1 + 1.2247 + 1.4142 + 1.5811 + 1.7321 + 1.8708) = 4.41145$
   $\Delta x = 1/2$

   e. [1, 4], RRAM, $n = 6$ $\frac{1}{2}(1.2247 + 1.4142 + 1.5811 + 1.7321 + 1.8708 + 2) = 4.91145$
   $\Delta x = 1/2$

   f. [1, 4], TRAP, $n = 3$ $\frac{1}{2}(1)(1 + 2(1.4142) + 2(1.7321) + 2) = 4.6463$
   $\Delta x = 1$

3. Approximate the area between the curve $y = 1 - x^2$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [0, 2], LRAM, $n = 4$ $\frac{1}{2}(1+.75+0+-1.25) = .25$
   $\Delta x = 1/2$

   b. [0, 2], RRAM, $n = 4$ $\frac{1}{2}(.75+0+-1.25+-3) = -1.75$
   $\Delta x = 1/2$

   c. [0, 2], TRAP, $n = 4$ $\frac{1}{2}(1+2(.75)+2(0)+2(-1.25)+-3) = -1.5$
   $\Delta x = 1/2$

   d. [0, 4], LRAM, $n = 4$ $1(1+0+-3+-8) = -10$
   $\Delta x = 1$

   e. [0, 4], RRAM, $n = 4$ $1(0+-3+-8+-15) = -26$
   $\Delta x = 1$

   f. [0, 4], TRAP, $n = 8$ $\frac{1}{2}\frac{1}{2}(1+2(.75)+2(0)+2(-1.25)+2(-3)+2(-5.25)+2(-8)+2(-11.25)$
   $-15) = -17.5$
   $\Delta x = 1/2$

4. Approximate the area between the curve $y = 2^x$ and the x – axis over the given interval using the given method and number of subintervals, n, of equal width.

   a. [–2, 2], LRAM, $n = 4$ $1(.25+.5+1+2) = 3.75$
   $\Delta x = 1$

   b. [–2, 2], RRAM, $n = 4$ $1(.5+1+2+4) = 7.5$
   $\Delta x = 1$

   c. [–2, 2], TRAP, $n = 8$ $\frac{1}{2}\cdot\frac{1}{2}(.25+2(.35355)+2(.5)+2(.70711)+2(1)+2(1.4142)$
   $+2(2)+2(2.8284)+4) = 4.86058$
   $\Delta x = 1/2$

   d. [0, 3], LRAM, $n = 6$ $\frac{1}{2}(1+1.4142+2+2.8284+4+5.6569) = 7.4497$
   $\Delta x = 1/2$

   e. [0, 3], RRAM, $n = 6$ $\frac{1}{2}(1.4142+2+2.8284+4+5.6569+8) = 10.9497$
   $\Delta x = 1/2$

   f. [0, 3], TRAP, $n = 3$ $\frac{1}{2}\cdot(1)(1+2(2)+2(4)+8) = 10.5$
   $\Delta x = 1$