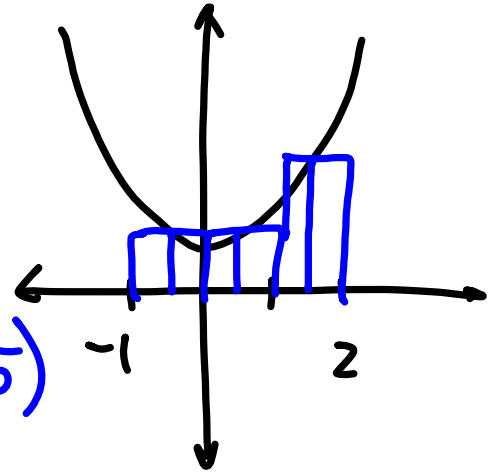


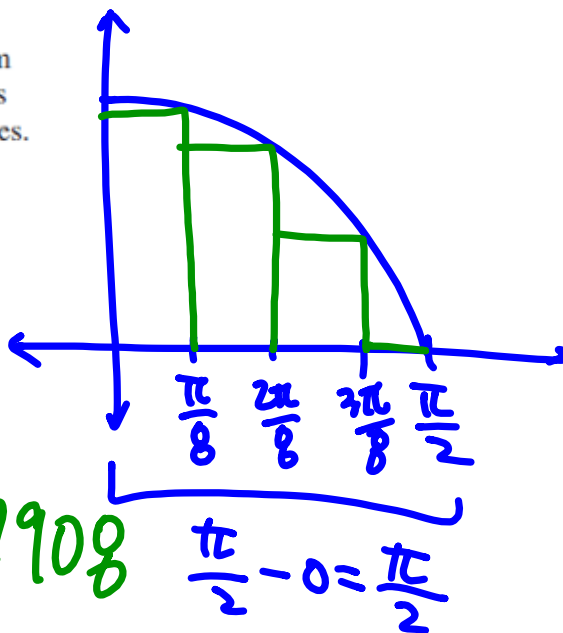
5. (a) Estimate the area under the graph of $f(x) = 1 + x^2$ from $x = -1$ to $x = 2$ using three rectangles and right endpoints. Then improve your estimate by using six rectangles. Sketch the curve and the approximating rectangles. Sketch the curve and the approximating rectangles.
- (b) Repeat part (a) using left endpoints.
- (c) Repeat part (a) using midpoints.
- (d) From your sketches in parts (a)–(c), which appears to be the best estimate?



$$\begin{aligned}
 \text{c) Area} &= (1) f(-.5) + 1 \cdot f(.5) \\
 &\quad + 1 \cdot f(1.5) \\
 &= 1.25 + 1.25 + 3.25 = 5.75
 \end{aligned}$$

3. (a) Estimate the area under the graph of $f(x) = \cos x$ from $x = 0$ to $x = \pi/2$ using four approximating rectangles and right endpoints. Sketch the graph and the rectangles. Is your estimate an underestimate or an overestimate?
 (b) Repeat part (a) using left endpoints.

RRAM



$$\text{Area: } \frac{\pi}{8} \left(f\left(\frac{\pi}{8}\right) + f\left(\frac{2\pi}{8}\right) + f\left(\frac{3\pi}{8}\right) + f\left(\frac{\pi}{2}\right) \right) = .7908$$

L1	L2	L3	L4	L5	2
.3927	.92388				
.7854	.70711				
1.1781	.38268				
1.5708	0				

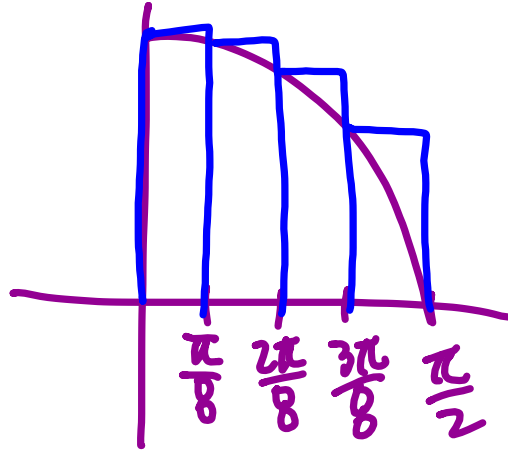
L2(b) = .92387953251128

1-Var Stats	
$\Sigma x = 2.013669746$	
$2.014 * \pi / 8$.7908959505

$$\frac{\pi/2}{4} = \frac{\pi}{8}$$

under

LRAM



Area: $\frac{\pi}{8} \left(f(0) + f\left(\frac{\pi}{8}\right) + f\left(\frac{2\pi}{8}\right) + f\left(\frac{3\pi}{8}\right) \right) = \underline{\underline{1.184}}$

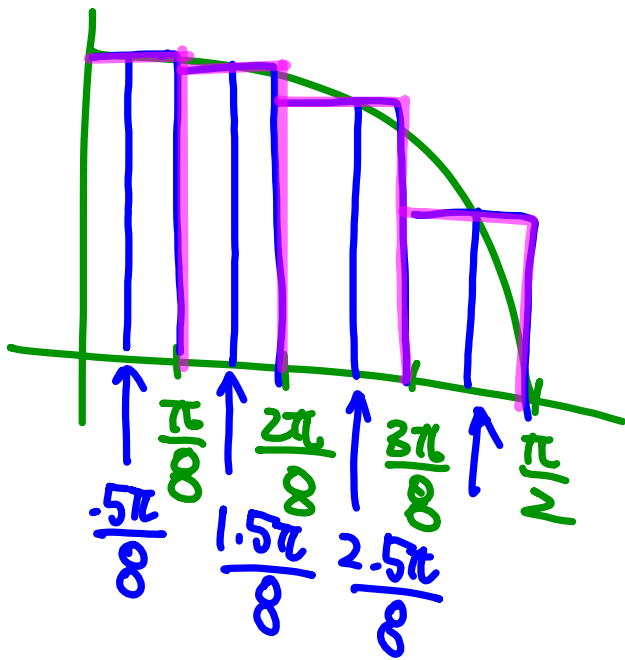
↑ f(x)

L1	L2	L3	L4	L5
.3927	.92388			
.854	.70711			
1.1781	.38268			
0	1			

1-Var Stats	
$\Sigma x = 3.013669746$	
$\Sigma x^2 = 2.3$	
$3.014 * \pi / 8$	
1.183595032	

L2(L1) = .92387953251128

0 var



h (feet)	0	2	5	10
$A(h)$ (square feet)	50.3	14.4	6.5	2.9

1. A tank has a height of 10 feet. The area of the horizontal cross section of the tank at height h feet is given by the function A , where $A(h)$ is measured in square feet. The function A is continuous and decreases as h increases. Selected values for $A(h)$ are given in the table above.
- (a) Use a left Riemann sum with the three subintervals indicated by the data in the table to approximate the volume of the tank. Indicate units of measure.

$$\begin{aligned} \text{Area} &= 2(50.3) + 3(14.4) + 5(6.5) \\ &= 176.3 \text{ ft}^3 \end{aligned}$$

