

Group Work 20

1. The graph of $f(x) = 4 - x^2$ is below. Let A be the area under f(x) from x = 0 to x = 2.



- (a) Give your best estimate of the area A that you can. Make sure to explain your answer.
- (b) Was your estimate an over or underestimate (or are you not sure)?



y

3

 $\mathbf{2}$

1

 $^{-1}$

-2

(c) Estimate A by computing the area in the 2 large rectangles. Call this estimate L_2 .

$$L_2 =$$

(d) Is L_2 an over or underestimate (or are you not sure)? *Explain.*



 $L_4 =$

(f) Is L_4 an over or underestimate (or are you not sure)? *Explain.*



(i) Now what do you think is the best estimate of A? How could you get a better estimate?

2. The graph of $f(x) = \cos x$ is below. Let A be the area under $\cos(x)$ from $x = -\frac{\pi}{2}$ to x = 0.



- (a) Estimate A using R_3 , and draw the associated rectangles.
 - $R_3 =$
- (b) Is R_3 an over or underestimate (or are you not sure)? *Explain.*