AUTHOR 1 ———————————

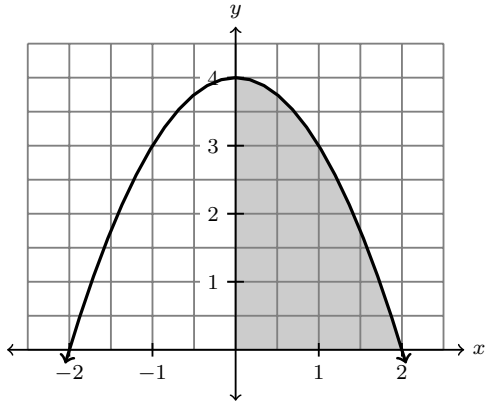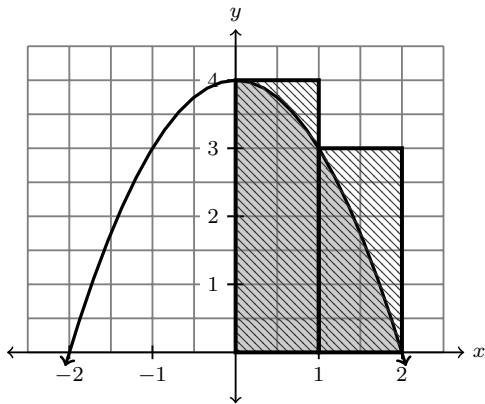AUTHOR 2 ———————————

AUTHOR 3 ———————————

26 – Area

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.*
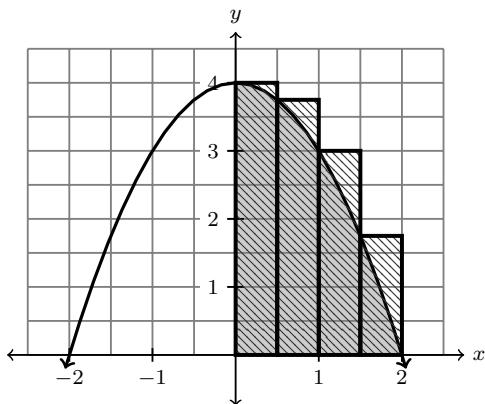
(b) Was your estimate an over or underestimate (or are you not sure)?

(c) Compute the area in the 2 large rectangles. This estimate of A is called L_2.
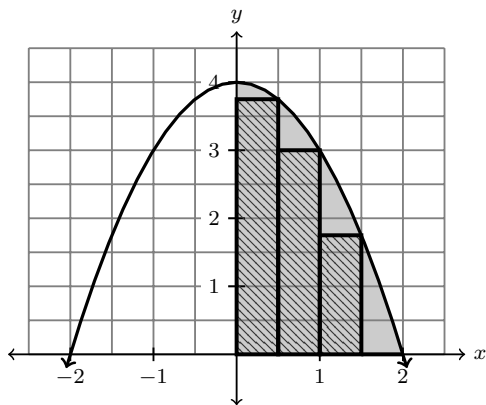
$L_2 =$

(d) Is L_2 an over or underestimate (or not sure)? *Why?*

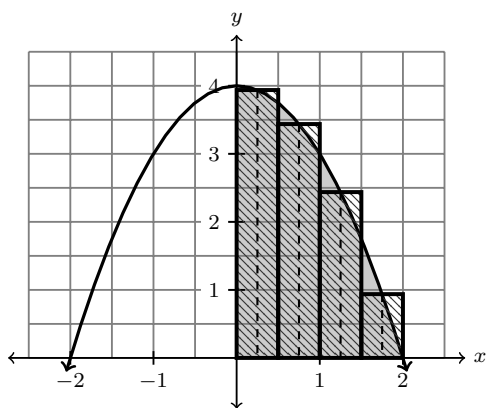**(e)** Compute the area in the 4 large rectangles. This estimate of A is called L_4.

$L_4 =$

(f) Is L_4 an over or underestimate (or not sure)? *Why?*

(g) Repeat for these 4 rectangles. This is R_4. (Do you see where the 4$^{\text{th}}$ one is?)

$R_4 =$

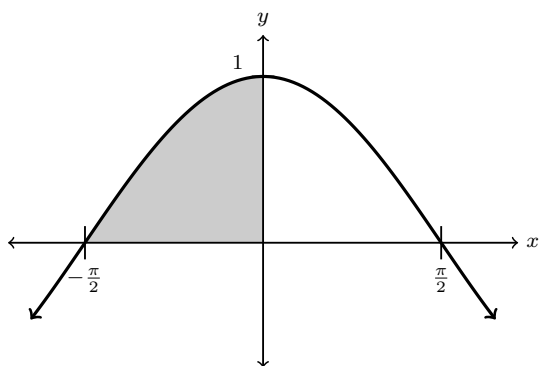**(h)** Is R_4 an over or underestimate (or not sure)?

(i) Repeat for these 4 rectangles. This is M_4. To find the heights, use the fact that $f(x) = 4 - x^2$.

$M_4 =$

(j) Is M_4 an over or underestimate (or not sure)?

(i) Which 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 not sure)?

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