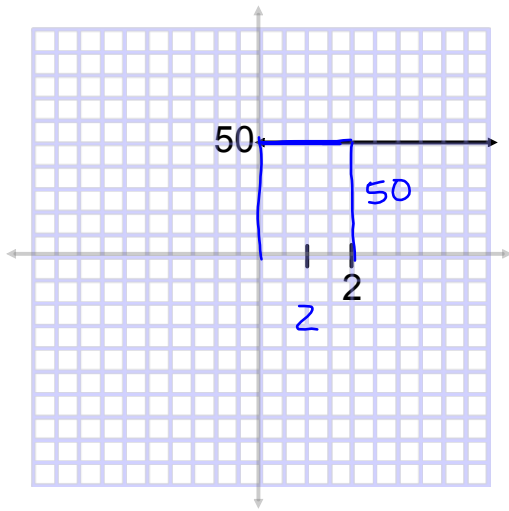


5.1a Estimating with finite Sums

Find the area under the curve:

if a car is driving 50 mph for 2 hrs, how far has it gone?

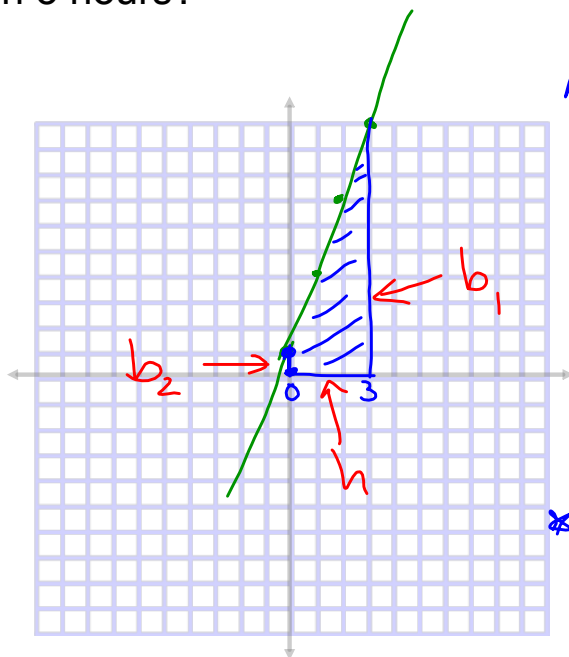


$$50 \frac{\text{m}}{\text{h}} \cdot 2 \text{h}$$

100 miles

area under a velocity curve represents the distance traveled

if a cars velocity is described by $v(t)=3x+1$, how far has it gone in 3 hours?



$$A_{\text{Trap.}} = \frac{1}{2} h (b_1 + b_2)$$

$$= \frac{h (b_1 + b_2)}{2}$$

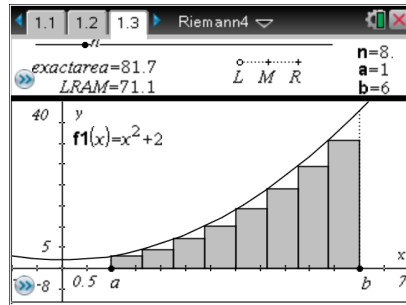
$$= \frac{h}{2} (b_1 + b_2)$$

* bases are the || sides

$$A = \frac{3(1+10)}{2} = \frac{33}{2} = 16.5$$

a cars velocity is described by $v(t) = x^2 + 2$

Find the area under the curve:



these are left hand rectangles! An equation for the sum:

$$A = b \cdot h$$

$$\sum_{i=0}^{n-1} \left(\frac{b-a}{n} \right) f(a + i(dx))$$

$\frac{b-a}{n}$ is the width of each rectangle, dx .
 $f(a + i(dx))$ is the height of the left-hand rectangle.
 $i=0$ indicates the first rectangle, starting at $x=a$.
 The sum is taken from $i=0$ to $i=n-1$.

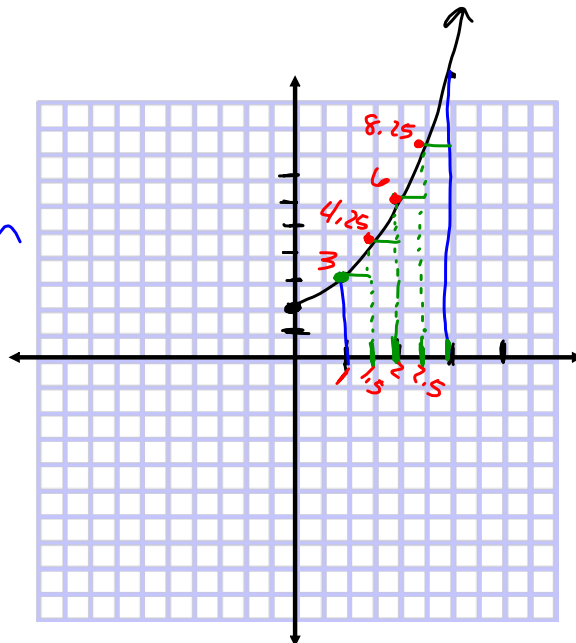
$$y = x^2 + 2$$

area between

1 & 3

divide into

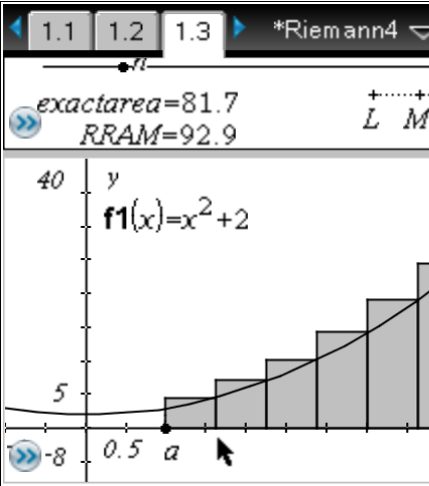
4 rect.



$$A \approx (.5)(3) + (.5)(4.25) + (.5)(6) + (.5)(8.25)$$

$$A \approx 10.75$$

Find an equation for the



exactarea=81.7
RRAM=92.9

$f_1(x) = x^2 + 2$

```

*rram
Define LibPub rram(a,b,n)=
Func
Return  $\sum_{i=1}^n (f(a+i \cdot dx)) \cdot dx \mid dx = \frac{b-a}{n}$ 
EndFunc

```

LRAM - left Rect. Approx. Method
RRAM
MRAM