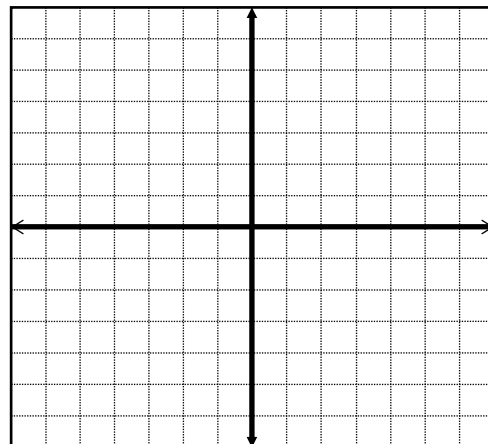


Average Value (6.2)

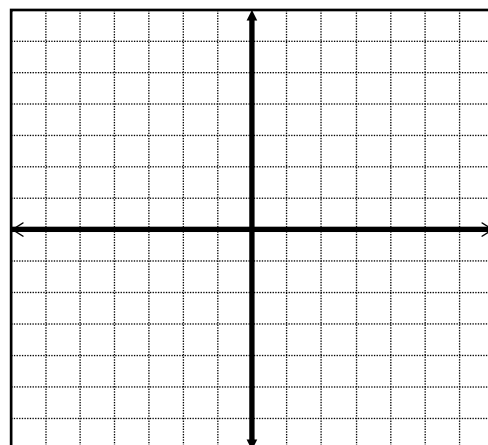
$$f(c) = \frac{1}{b-a} \int_a^b f(x) dx, \quad \text{with the given interval } [a, b]$$

Average Value: Calculate the average over the given interval.

1) $f(x) = \frac{1}{x^2 + 1}, [-1, 1]$



2) $f(x) = \sin(\pi/x), [1, 2]$



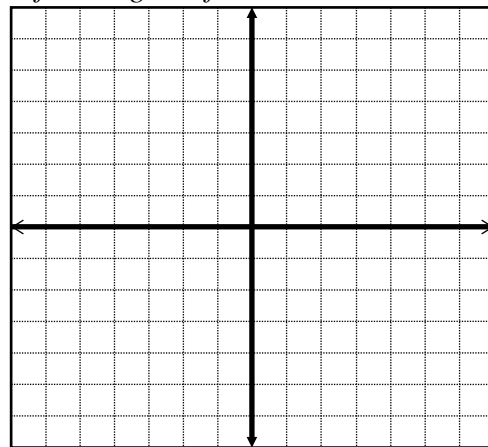
3) A ball thrown in the air vertically from ground level with initial velocity 18 m/s has height $h(t) = 18t - 9.8t^2$ at time t (in seconds). Find the average height and the average speed over the time interval extending from the ball's release to its return to ground level.

Volumes (6.3)

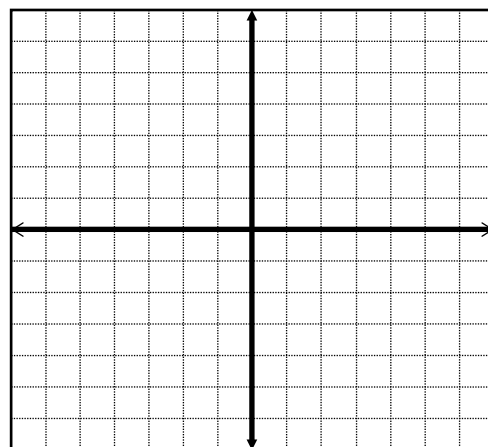
$$V = \pi \int_a^b R^2 dx = \pi \int_a^b f(x)^2 dx$$

Finding Volumes: Find the volume of revolution about the x -axis for the given function and interval.

4) $f(x) = \frac{1}{x^2}$, $[1, 4]$



5) $f(x) = 4 - x^2$, $[0, 2]$



6) $f(x) = \sqrt{x^4 + 1}$, $[1, 3]$

