

1. The velocity of an object is given  $v(t) = t^2 + 1$ .
  - a) How far does the object travel between  $t = 0$  and  $t = 6$ ?
  - b) what is the average velocity of the object on the interval  $[0, 6]$ ?
  - c) What is the average velocity of the object on the interval  $[2, 10]$ ?
2. The velocity of an object is given  $v(t) = 7e^{-t/2}$ .
  - a) How far does the object travel between  $t = 0$  and  $t = 4$ ?
  - b) what is the average velocity of the object on the interval  $[0, 4]$ ?
  - c) What is the average velocity of the object on the interval  $[0, 10]$ ?
3. The velocity of an object is  $v(t) = -6t + 15$ .
  - a) How far does the object travel between  $t = 0$  and  $t = 3$ ?
  - b) What is the average velocity of the object on the interval  $[0, 3]$ ?
4. Find the average value of the function  $f(x) = \frac{1}{\sqrt{x}}$  on the interval  $[1, 5]$
5. Water is flowing out of a reservoir at  $300t^2$  liters per second for  $t$  between 0 and 5. How many liters are released in this period?
6. Compute the area determined by the graphs of  $f(x) = 2x + 8$  and  $g(x) = x^2 + 5$ .
7. Compute the area determined by the graphs of  $f(x) = x^2 - 9$  and  $g(x) = 9 - x^2$ .
8. Compute the area determined by the graphs of  $f(x) = 4 - x^2$  and  $g(x) = 3x$ .

## Answers

1. a) 78      b) 13      c)  $\frac{127}{3}$
2. a)  $14 - \frac{14}{e^2}$       b)  $\frac{7}{2} - \frac{7}{2e^2}$       c)  $\frac{7}{5} - \frac{7}{5e^5}$
3. a) 18      b) 6
4.  $\frac{\sqrt{5} - 1}{2}$
5. 12 500 liters
6.  $\frac{32}{3}$
7. 72
8.  $\frac{125}{6}$

For more documents like this, visit our page at <https://teaching.martahidegkuti.com> and click on Lecture Notes.  
E-mail questions or comments to [mhidegkuti@ccc.edu](mailto:mhidegkuti@ccc.edu).