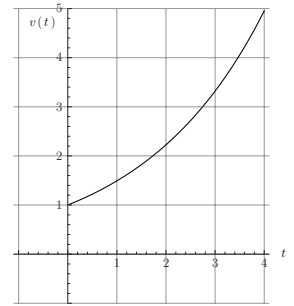


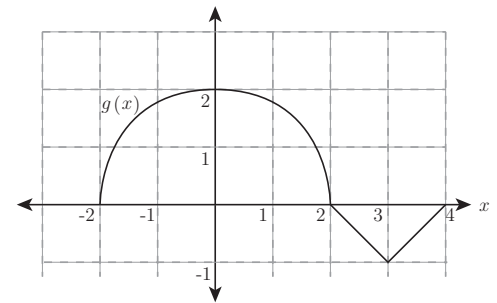
YOU MAY USE A CALCULATOR TO VERIFY SOLUTIONS, BUT NOT TO PROVIDE THEM.

Show all relevant work!

1. The velocity of a wasp (in feet per second) is plotted against time (in seconds) in the graph below. Find the approximate distance the wasp has traveled between  $t = 0$  and  $t = 4$  seconds.



2. The graph of  $g(x)$  is shown below. Find  $\int_{-2}^4 g(x) dx$ .



3. For the definite integral  $\int_{-5}^5 \sqrt{25 - x^2} dx$ ,

(a) Approximate the value of the integral using left and right Riemann sums with  $n = 10$  subdivisions.

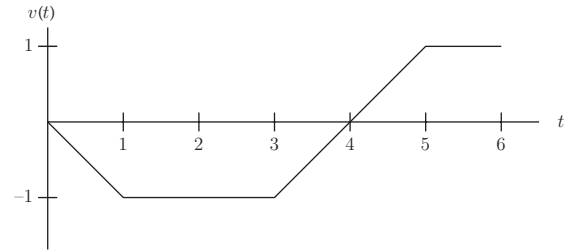
(b) Find the exact value of the the integral by applying geometry.

4. Suppose a car's velocity at 2 second intervals is recorded in this table. How far has it traveled between  $t = 0$  and  $t = 10$  seconds? (Use LHS and RHS and average your result)

Time	0	2	4	6	8	10
Velocity	0	40	65	85	70	50

5. The velocity of a boy is given in feet per second over time in seconds in the graph. Assume that the boy begins 2 feet from the starting line and that the direction of positive velocity is North while negative velocity points south.

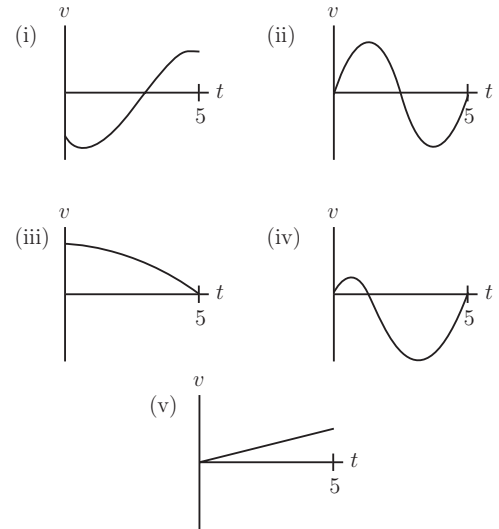
Complete the table for the displacement of the boy from the starting line at each time.



Time	0	1	2	3	4	5	6
Displacement	2						

6. The graphs to the right represent the velocity,  $v$ , of a particle moving along the  $x$ -axis for time  $0 \leq t \leq 5$ . The vertical scales of all graphs are the same. Identify the graph showing which particle:

- (a) Has a constant acceleration. \_\_\_\_\_  
 (b) Ends up farthest to the left of where it started. \_\_\_\_\_  
 (c) Ends up the farthest from its starting point. \_\_\_\_\_  
 (d) Experiences the greatest initial acceleration. \_\_\_\_\_  
 (e) Has the greatest average velocity. \_\_\_\_\_  
 (f) Has the greatest average acceleration. \_\_\_\_\_



7. The company that makes Super Sugar Bombs cereal puts 450 grams of cereal in their boxes. They want to keep the cereal quantities between 442 and 458 grams and assume that the weights are distributed normally with a standard deviation of 6 grams. Recall that the probability density function for a normal distribution is given by  $p(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-(x-\mu)^2/2\sigma^2}$  where  $\mu$  is the mean and  $\sigma$  is the standard deviation. What is the probability that the cereal boxes are filled within the manufacturer's specifications?

Check your answer by using the probability distribution menu of your calculator  $\rightarrow$  **2nd** **VARS** **2**, the syntax is **normalcdf**(lower bound, upper bound,  $\mu$ ,  $\sigma$ ).