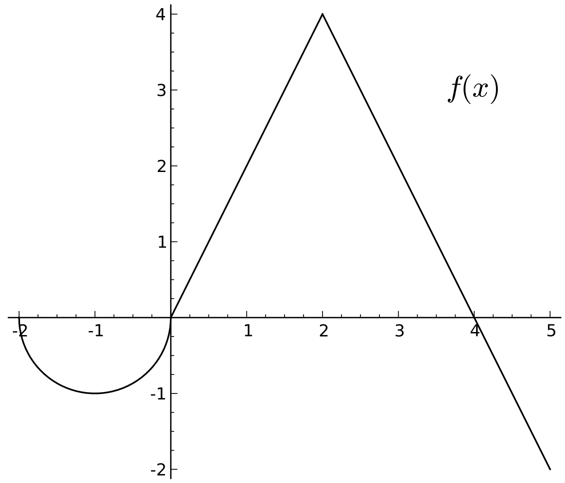
2. [18 points] The graph of the function $f(x)$, shown below, consists of line segments and a semicircle. Compute each of the following quantities.



a. [7 points]

1. $\int_0^2 f(x)dx =$

2. $\int_{-2}^2 |f(x)|dx =$

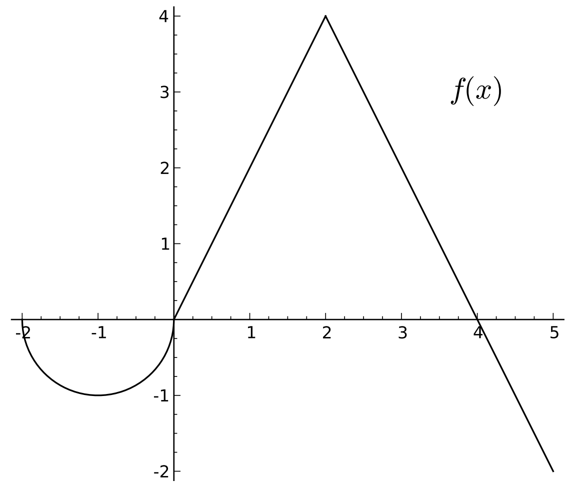
3. $\int_0^5 f(x)dx =$

4. $\int_{-2}^2 2f(x)dx + \int_5^2 3f(x)dx =$

5. The average A of $f(x)$ on the interval $[-2, 5]$. $A =$

6. $\int_0^1 f(5x)dx =$

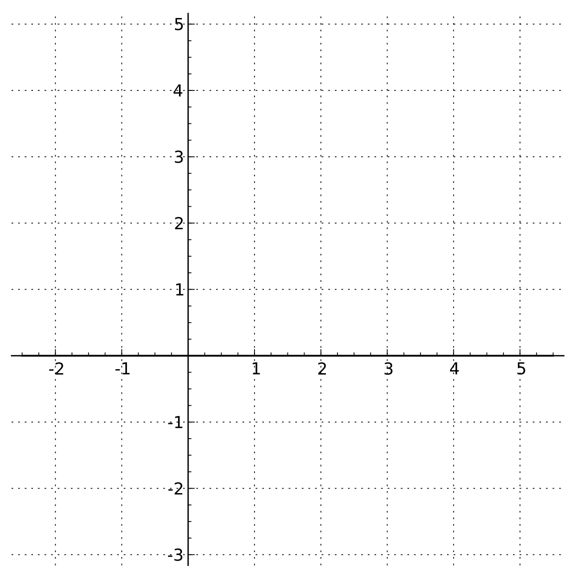
b. [4 points]



If $f(x)$ is the derivative of a function $g(x)$ with $g(2) = 1$, fill in the table of values of $g(x)$, provided below, at the specified points (the graph has been reproduced for your convenience):

x	-2	0	2	4	5
$g(x)$			1		

c. [5 points] Graph $g(x)$. Make sure your graph indicates the intervals on which $g(x)$ is increasing, decreasing, concave up, and concave down.



d. [2 points] Let $h(x) = \int_0^x f(t)dt$. Find a constant C such that $g(x) = h(x) + C$. Show all your work.