solution
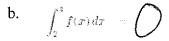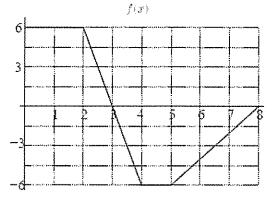
name

1. (6 pts.) Let f be the graph of the function shown
to the right. Calculate each of the integrals that
follow exactly. Show your work.

a. $\int_0^3 f(x)\,dx$ = $12 + 3 = 15$

b. $\int_2^6 f(x)\,dx$ = 0

c. $\int_5^8 f(x)\,dx$ = $\frac{1}{2} \cdot 3 \cdot 6 = 9$

2. (4 pts.) Suppose a winter storm hits Mount Vernon and snow starts to fall at 7 p.m. The
rate of fall is given in this table:

Time of day	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.
Rate of snowfall (in/hr)	.5	.5	1	1	1.5

a. Estimate amount of snow that fell between 7 p.m. and midnight.

using a left-hand rule

$.5 + .5 + 1 + 1 + 1.5 = 4.5$

b. Suppose we know the rate of snowfall as a function, f(t), rather than just at discrete
times. Write the amount of snowfall between 7 p.m. and midnight as an integral (let 7
p.m. be t = 0).

$$\int_0^5 f(t)\,dt$$

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