Math 76 Lecture Problem Solving 5.1-5.3
Burger
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Estimate the value of the quantity.

1) The table shows the velocity of a remote controlled race car moving along a dirt path for 8 seconds.   1) _____
Estimate the distance traveled by the car using 8 subintervals of length 1 with left–end point
values.

Time (sec)	Velocity (in./sec)
0	0
1	10
2	24
3	20
4	30
5	33
6	35
7	12
8	5

   A) 169 in.   B) 328 in.   C) 164 in.   D) 154 in.

2) Joe wants to find out how far it is across the lake. His boat has a speedometer but no odometer.   2) _____
The table shows the boats velocity at 10 second intervals. Estimate the distance across the lake
using right–end point values.

Time (sec)	Velocity (ft/sec)
0	0
10	12
20	30
30	53
40	50
50	55
60	52
70	55
80	45
90	15
100	0

   A) 367 ft   B) 5500 ft   C) 3770 ft   D) 3670 ft

Use a finite approximation to estimate the area under the graph of the given function on the stated interval as instructed.

3) $f(x) = x^2$ between $x = 3$ and $x = 7$ using a left sum with four rectangles of equal width.   3) _____
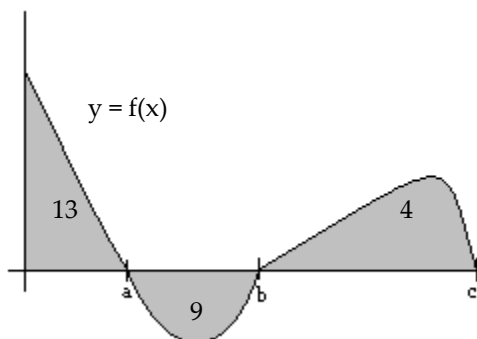   A) 126   B) 105   C) 86   D) 117

Evaluate the sum.

4) $\sum_{k=1}^{7} k^2 - 4$ 4) _____
   A) 140   B) 45   C) 112   D) 136

The figure shows the area of regions bounded by the graph of f and the x –axis. Evaluate the integral.

5) $\int_a^c f(x)$

5) _____

A) 5   B) -13   C) 13   D) -5

Solve the problem.

6) Suppose that f is continuous and that $\int_{-3}^{3} f(z)\,dz = 0$ and $\int_{-3}^{5} f(z)\,dz = 6$. Find $\int_{5}^{3} f(x)\,dx$.

6) _____

A) –12   B) –6   C) 6   D) 12

Compute the definite integral as the limit of Riemann sums.

7) $\int_1^2 (5x - 1)\,dx$

7) _____

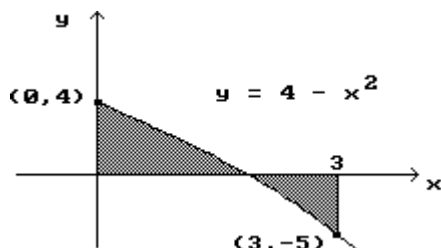A) $\frac{1}{2}$ B) 8   C) $-\frac{1}{2}$ D) $\frac{13}{2}$

Find the area of the shaded region.

8)

8) _____

A) $\frac{5}{3}$ B) 5   C) $\frac{23}{3}$ D) 3

Find the total area of the region between the curve and the x –axis.

9) $y = 2x - x^2;\ 0 \le x \le 2$

9) _____

A) $\frac{7}{3}$ B) $\frac{4}{3}$ C) $\frac{2}{3}$ D) $\frac{5}{3}$

Find the derivative.

10) $\dfrac{d}{dx} \displaystyle\int_0^x \sqrt{6t+9}\, dt$ 10) _____

    A) $\dfrac{1}{9}(6x+9)^{3/2}$ B) $\sqrt{6x+9}$ C) $\dfrac{3}{\sqrt{6x+9}}$ D) $\sqrt{6x+9} - \sqrt{9}$

11) $\dfrac{d}{dx} \displaystyle\int_1^{\sqrt{x}} 18t^7\, dt$ 11) _____

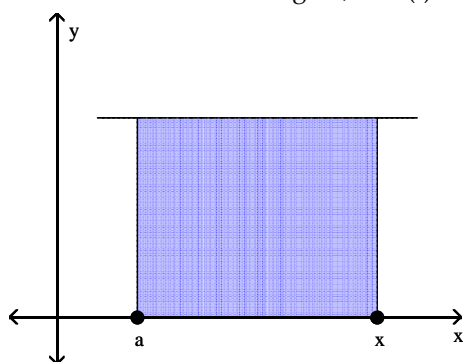   A) $18x^{7/2}$ B) $9x^3$ C) $12x^5$ D) $\dfrac{9}{4}x^5 - \dfrac{9}{4}$

Solve the problem.

12) Consider the graph of f shown in the figure. Find the area function $A(x) = \displaystyle\int_a^x f(t)\, dt$, where A(x) is   12) _____

the area of the shaded region, for f(t) = 16 and a = -6.

    A) $A(x) = 16(x+6)$ B) $A(x) = 16(x-6)$ C) $A(x) = 16x+6$ D) $A(x) = 16(6-x)$