1) Values of a function $W(t)$ are given in the table to the right.

<table>
<thead>
<tr>
<th>$t$</th>
<th>1</th>
<th>1.4</th>
<th>1.8</th>
<th>2.2</th>
<th>2.6</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$W(t)$</td>
<td>25</td>
<td>28</td>
<td>35</td>
<td>45</td>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

Left sum: 73.2  
Right sum: 87.5  
Average: 80.2

b) For your estimate in part (a), what is $n$? What is $\Delta t$?

$\Delta = 0.4$ and $n = 5$

2) Estimate the value of the definite integral $\int_{1}^{3} \frac{6}{x} \, dx$ by using $n = 4$ and computing:

\[
\begin{array}{c|c|c|c}
 x & f(x) = \frac{6}{x} \\
 \hline
 & & & \\
\end{array}
\]

a) The left hand sum = 7.7  
b) The right hand sum = 5.7

3) The marginal cost for a company is given by $C'(q) = 3q^2 - 48q + 100$ dollars/unit where $q$ is the quantity produced. If $C(0) = 500$, find the total cost of producing 10 units.

$100$

4) Suppose that the velocity of an object is given by $v(t) = -t^2 + 8t + 10$, where $t$ is in seconds. Estimate the distance traveled by the object during the first 5 seconds (that is, between $t = 0$ and $t = 5$) using $n = 5$

a) the left sum: $100$  
b) The right sum $115$

5) Find an antiderivative $F(x)$ with $F'(x) = e^{2x}$ and $F(0) = 4$.

$F(x) = \frac{1}{2} e^{2x} + \frac{7}{2}$
6) Evaluate the indefinite integrals of:

a) \( \int \left( x^3 + \frac{2}{x^3} - 8 \right) \, dx \) = \( \frac{x^4}{4} - \frac{1}{x^2} - 8x + c \)

b) \( \int (\sqrt[3]{x} + 2) \, dx \) = \( \frac{3}{4} x^{4/3} + 2x + c \)

c) \( \int \left( x^2 - \frac{3}{2} \sqrt[3]{x} + \frac{1}{3x^4} \right) \, dx \) = \( \frac{1}{3} x^3 - x^{3/2} - \frac{3}{x^{1/3}} + c \)

d) \( \int \left( 2 - \frac{4}{x} - \frac{1}{x^4} \right) \, dx \) = \( 2x - 4 \ln x + \frac{1}{3x^3} + c \)

7) Evaluate the definite integrals of:

a) \( \int_{1}^{6} \frac{6}{x} \, dx \) = \( 6 \)

b) \( \int_{1}^{2} (6x^3 + 2) \, dx \) = \( 24.5 \)

c) \( \int_{-2}^{1} (2 - x - x^2) \, dx \) = \( 4.5 \)

d) \( \int_{1}^{e} \left( x - \frac{1}{x} \right) \, dx \) = \( 2.19 \)
8) Find the area between \( y = 4x \) and \( y = x^2 + 3 \) and sketch the region bounded by the graphs

\[
\text{Area} = \frac{4}{3}
\]

9) Find the area between \( y = x^2 - 4x + 3 \) and \( y = -x^2 + 2x + 3 \) and sketch the region bounded by the graphs

\[
\text{Area} = 9
\]

10) Find the area between \( y = x^2 - 2x \) and the \( x \)-axis in \([0, 3]\) and sketch the region bounded by the graphs

\[
\text{Area} = 2.67
\]

11) The marginal revenue for the price of tickets is given by \( R' = 10q - 50 \) dollars per ticket, where \( q \) is the number of tickets. Find the total revenue from the sale of tickets for the first 20 tickets.

\[
\$1000
\]

12) What should \( A \) (annuity) per year be so that the amount of a continuous money flow over 10 years at interest rate 5%, compounded continuously, will be $20,000?

\[
\$1541.49
\]

13) Find the present value of an investment over 15 years period if there is a continuous money flow of $1000 per year and the current interest rate is 8% compounded continuously

\[
\$8735.07
\]