EMCF 30

1. Give the upper sum for $f(x) = 4 - x^2$ on the interval [-1,1] with respect to the partition

    $$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, 1 \right\}.$$

    a. 6.25
    b. 6.5
    c. 7.75
    d. 7.0
    e. 7.25
    f. None of these.

2. Give the lower sum for $f(x) = 4 - x^2$ on the interval [-1,1] with respect to the partition

    $$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, 1 \right\}.$$

    a. 6.25
    b. 6.5
    c. 6.75
    d. 7.0
    e. 7.25
    f. None of these.

3. Give the upper sum for $f(x) = 1 - 2x$ on the interval [-1,1] with respect to the partition

    $$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, 1 \right\}.$$

    a. 2
    b. 2.5
    c. 3
    d. 3.5
    e. 4
    f. None of these.

4. Give the lower sum for $f(x) = 1 - 2x$ on the interval [-1,1] with respect to the partition
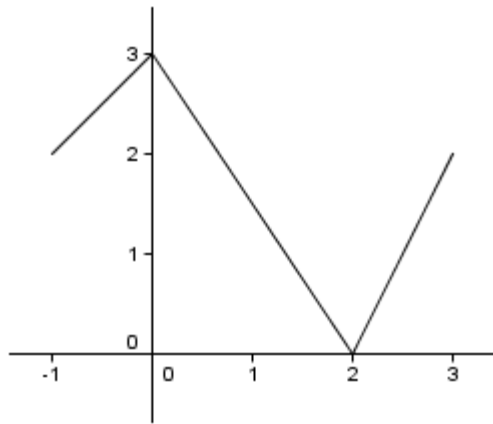
$$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, 1 \right\}.$$

    a. 0
    b. 0.5
    c. 1
    d. 1.5
    e. 2
    f. None of these.

The graph of f below will be used in problems 5 – 10. You might need to determine equations for the line segments to answer some of the problems.

5. Give the upper sum for f on the interval [-1,3] with respect to the partition

$$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3 \right\}.$$

    a. 7
    b. 7.5
    c. 8
    d. 8/5
    e. 9
    f. None of these.

6. Give the lower sum for f on the interval [-1,3] with respect to the partition

$$P = \left\{-1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3\right\}.$$

   a. 2.5
   b. 3
   c. 3.5
   d. 4
   e. 4.5
   f. None of these.

7. Give the upper sum for $g(x) = f(x) - 3$ on the interval [-1,3] with respect to the partition

$$P = \left\{-1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3\right\}.$$

   a. -3.5
   b. -3
   c. -2.5
   d. -2
   e. -1.5
   f. None of these.

8. Give the lower sum for $g(x) = f(x) - 3$ on the interval [-1,3] with respect to the partition

$$P = \left\{-1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3\right\}.$$

   a. -7.5
   b. -7.0
   c. -6.5
   d. -6.0
   e. -5.5
   f. None of these.

9. Give the upper sum for $g(x) = (f(x) - 1)^2$ on the interval [-1,3] with respect to the partition

$$P = \left\{-1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3\right\}.$$

   a. 8.1825
   b. 8.1850
   c. 8.1875
   d. 8.1900
   e. 8.1925
   f. None of these.

10. Give the lower sum for $g(x) = (f(x) - 1)^2$ on the interval [-1,3] with respect to the partition

$$P = \left\{ -1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 3 \right\}.$$

    a.   2.6775

    b.   2.6800

    c.   2.6825

    d.   2.6850

    e.   2.6875

    f.   None of these