PRINTABLE VERSION

Quiz 22

Question 1

Compute the upper Riemann sum for the given function $f(x) = x^2$ over the interval $x \in [-1, 1]$ with respect to the partition $P = \left[-1, -\frac{1}{2}, \frac{1}{2}, \frac{3}{4}, 1\right]$.

a) $\frac{21}{64}$

b) $\frac{73}{64}$

c) $\frac{115}{192}$

d) $\frac{167}{192}$

e) $\frac{47}{64}$

Question 2

Compute the upper Riemann sum for the given function $f(x) = 2 - x^2$ over the interval $x \in [0, 1]$ with respect to the partition $P = \left[0, \frac{1}{4}, \frac{3}{4}, 1\right]$.

a) $\frac{93}{64}$

b) $\frac{117}{64}$

c) $\frac{109}{64}$

d) $\frac{105}{64}$

e) $\frac{101}{64}$

Question 3

Compute the lower Riemann sum for the given function $f(x) = \sin(x)$ over the interval $x \in [0, \pi]$ with respect to the partition $P = \left[0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi\right]$.

a) $\frac{5}{6}\pi$

b) $\frac{1}{3}\pi$

c) $\frac{7}{12}\pi$

d) $\frac{1}{2}\pi$

e) $\frac{2}{3}\pi$

Question 4

Estimate the integral $\int_0^6 x^2 \, dx$ by the left endpoint estimate, n = 6.

a) 55

b) 58

c) 52

d) 61

e) 50

Question 5

Estimate the integral $\int_0^{12} 5x^2\,dx$ by the midpoint estimate, n = 6.

a) 2574

b) 2860

c) 3003

d) 3146

e) 2717

Question 6

Given that
$\int_0^1 f(x)\,dx = 2, \int_0^4 f(x)\,dx = 4$ and $\int_4^5 f(x)\,dx = 3$ find $\int_0^5 f(x)\,dx.$

a) 9

b) 7

c) 1

d) 4

e) 3

Question 7

Given that $\int_0^1 f(x)\,\mathrm{d}x = 4, \int_0^4 f(x)\,\mathrm{d}x = 6$ and $\int_4^7 f(x)\,\mathrm{d}x = 4$ find $\int_7^1 f(x)\,\mathrm{d}x.$

a) -4

b) 0

c) 4

d) -6

e) 6

Question 8

Given that $\int_1^4 f(x)\,\mathrm{d}x = 3, \int_3^4 f(x)\,\mathrm{d}x = 3$ and $\int_1^6 f(x)\,\mathrm{d}x = 7$ find $\int_4^6 f(x)\,\mathrm{d}x.$

a) -4

b) 10

c) 13

d) 4

e) -7

Question 9

Given that $\int_1^4 f(x)\,\mathrm{d}x = 3, \int_3^4 f(x)\,\mathrm{d}x = 5$ and $\int_1^7 f(x)\,\mathrm{d}x = 6$ find $\int_3^7 f(x)\,\mathrm{d}x$.

a) -8

b) -3

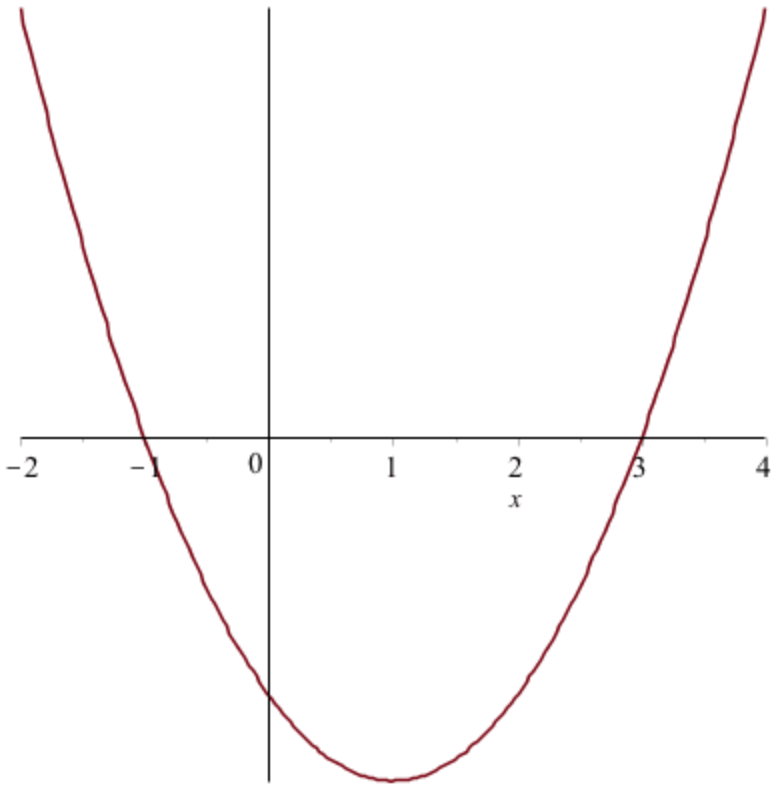
c) 8

d) 9

e) 14

Question 10

The graph of f is shown below on the interval $[-2, 4]$.



The area bounded between the graph of f and the x-axis on $[-2,-1]$ is $\frac{7}{3}$, the area bounded between the graph of f and the x-axis on $[-1,3]$ is $\frac{32}{3}$, and the area bounded between the graph of f and the x-axis on $[3,4]$ is $\frac{7}{3}$. Determine $\int_{-2}^{-1} f(x)\,\mathrm{d}x$.

a) $\frac{7}{3}$

b) 0

c) $\frac{46}{3}$

d) $-\frac{7}{3}$

e) 13