

Assignment-Average value theorem

For each problem, find the average value of the function over the given interval.

1) $f(x) = 2x + 2$; $[-4, 1]$

2) $f(x) = -x^2 - 2x - 2$; $[-2, 1]$

3) $f(x) = e^x$; $[-1, 1]$

4) $f(x) = -4x^{\frac{1}{2}}$; $[0, 2]$

5) $f(x) = -x^2 + 4x - 1$; $[0, 4]$

6) $f(x) = \frac{3}{x}$; $[2, 4]$

7) $f(x) = \frac{1}{\sqrt{1-x^2}}$; $[\frac{\sqrt{2}}{2}, \frac{\sqrt{3}}{2}]$

8) $f(x) = \csc x \cot x$; $[\frac{\pi}{4}, \frac{\pi}{2}]$

9) $f(x) = -3e^x$; $[-2, 0]$

10) $f(x) = -e^x$; $[-3, 0]$

Answers to Assignment-Average value theorem (ID: 1)

1) -1

2) -2

3) $\frac{e^2 - 1}{2e} \approx 1.175$

4) $-\frac{8\sqrt{2}}{3} \approx -3.771$

5) $\frac{5}{3} \approx 1.667$

6) $\frac{3\ln 4 - 3\ln 2}{2} \approx 1.04$

7) $\frac{\pi\sqrt{3} + \pi\sqrt{2}}{6} \approx 1.647$

8) $\frac{-4 + 4\sqrt{2}}{\pi} \approx 0.527$

9) $\frac{-3e^2 + 3}{2e^2} \approx -1.297$

10) $\frac{-e^3 + 1}{3e^3} \approx -0.317$

