The method: Average value

The average value of f from a to b is the integral from a to b divided by (b − a).

the average value of $f(x) = 2x^2 + x + 7$ from $x = 1$ to $x = 4$: $\frac{47}{2}$

$\frac{1}{4-1}\int_1^4 (2x^2 + x + 7)\,dx$ the integral divided by the width

$F(x) = \frac{2x^3}{3} + \frac{x^2}{2} + 7x$

$(\frac{236}{3}) - (\frac{49}{6}) = \frac{141}{2}$ the integral

$\frac{\frac{141}{2}}{3} = \frac{47}{2}$ divide by 3

Problems 1 and 2 worked out · Version 0A

the average value of $f(x) = 2x^2 + 6x + 1$ from $x = 2$ to $x = 4$: $\frac{113}{3}$

$\frac{1}{4-2}\int_2^4 (2x^2 + 6x + 1)\,dx$ the integral divided by the width

$F(x) = \frac{2x^3}{3} + 3x^2 + x$

$(\frac{284}{3}) - (\frac{58}{3}) = \frac{226}{3}$ the integral

$\frac{\frac{226}{3}}{2} = \frac{113}{3}$ divide by 2

the average value of $f(x) = 3x^2 - 5x - 5$ from $x = 0$ to $x = 4$: 1

$\frac{1}{4-0}\int_0^4 (3x^2 - 5x - 5)\,dx$ the integral divided by the width

$F(x) = x^3 - \frac{5x^2}{2} - 5x$

$(4) - (0) = 4$ the integral

$\frac{4}{4} = 1$ divide by 4

Average value · Version 0A

1) $\frac{113}{3}$ 2) 1 3) $\frac{11}{3}$ 4) 46 5) $-\frac{7}{3}$ 6) 25 7) $-\frac{1}{2}$

8) $\frac{2}{3}$ 9) -5 10) $-\frac{11}{3}$