

Fill in the Blanks

Mean Value of a Function

$f(x)$	a	b	$b - a$	Mean Value of $f(x)$ in the interval $[a, b]$	Mean Value of $f(x) - 3$	Mean Value of $-2f(x)$
x^3	1	4	3	$\frac{1}{3} \int_1^4 x^3 dx = \frac{1}{3} \left[\frac{x^4}{4} \right]_1^4$	$\frac{85}{4}$	$\frac{73}{4}$ $-\frac{85}{2}$
e^{2x}	0	2	2	$\frac{1}{2} \int_0^2 e^{2x} dx = \frac{1}{2} \left[\frac{e^{2x}}{2} \right]_0^2$	$\frac{e^4 - 1}{4}$	$\frac{e^4 - 13}{4}$ $\frac{1 - e^4}{2}$
$\sqrt{1 + 2x}$	0	4	4	$\frac{1}{4} \int_0^4 (1 + 2x)^{1/2} dx = \frac{1}{4} \left[\frac{2}{3} (1 + 2x)^{3/2} \right]_0^4$	$\frac{13}{6}$	$-\frac{5}{6}$ $-\frac{13}{3}$
$\sin(3x)$	0	π	π	$\frac{1}{\pi} \int_0^\pi \sin(3x) dx = \frac{1}{\pi} \left[-\frac{\cos(3x)}{3} \right]_0^\pi$	$\frac{2}{3\pi}$	$\frac{2 - 9\pi}{3\pi}$ $-\frac{4}{3\pi}$
$(1 - x)^2$	1	3.5	2.5	$\frac{2}{5} \int_1^{3.5} (1 - x)^2 dx = \frac{2}{5} \left[-\frac{(1 - x)^3}{3} \right]_1^{3.5}$	$\frac{25}{12}$	$-\frac{11}{12}$ $-\frac{50}{12}$
$\frac{1}{\sqrt{x + 2}}$	-1	7	8	$\frac{1}{8} \int_{-1}^7 (x + 2)^{-1/2} dx = \frac{1}{8} \left[2(x + 2)^{1/2} \right]_{-1}^7$	$\frac{1}{2}$	$-\frac{5}{2}$ -1
$\cos\left(\frac{x}{4}\right)$	$-\pi$	2π	3π	$\frac{1}{3\pi} \int_{-\pi}^{2\pi} \cos\left(\frac{x}{4}\right) dx = \frac{1}{3\pi} \left[4 \sin\left(\frac{x}{4}\right) \right]_{-\pi}^{2\pi}$	$\frac{4 + 2\sqrt{2}}{3\pi}$	$\frac{4 + 2\sqrt{2} - 9\pi}{3\pi}$ $\frac{-8 - 4\sqrt{2}}{3\pi}$