Get Smart

The answer is Agent 99, no matter which four integrals are chosen.

Here are the answers to the sixteen definite integral problems:

$\int_0^4 \left(2x^2 + x - \frac{5}{2}\right) dx = 40\frac{2}{3}$

$\int_{-1}^{1} x^2\, dx = \frac{2}{3}$

$\int_1^4 \sqrt{x}\, dx = 4\frac{2}{3}$

$\int_{\frac{-\pi}{4}}^{\frac{\pi}{4}} \cos 2x\, dx = 1$

$\int_{-11}^{27} dw = 38$

$\int_5^0 \frac{dw}{\sqrt{9-w}} = -2$

$\int_0^3 \frac{dt}{\sqrt{4-t}} = 2$

$\int_0^1 \left(x^2 - 2\right) dx = -1\frac{2}{3}$

$\int_1^8 2\sqrt{1+3x}\, dx = 52$

$\int_0^2 \left(\left(2x-1\right)^3 + 1\right) dx = 12$

$\int_0^4 \frac{5x\sqrt{x}\, dx}{4} = 16$

$\int_4^9 \left(\sqrt{r} - \frac{1}{15}\right) dr = 12\frac{1}{3}$

$\int_{-3}^{1} \left(6x^2 - 5x + 2\right) dx = 84$

$\int_0^{121} \frac{2\, dx}{\sqrt{x}} = 44$

$\int_{-7}^{5} \left(3 - y\right) dy = 48$

$\int_0^4 \frac{\left(4x^2 + 12x - 1\right) dx}{4} = 44\frac{1}{3}$

How does it work?

The table is really just an addition table.

The restriction in picking the four integrals to evaluate forces the student to choose exactly one number from each row and column.

So, the sum of the four numbers is really the sum of the 8 numbers of the addition table (the red numbers in the row and column headings below).

The sum of 40 + 0 + 4 + (1/3) + (2/3) + (-2) + 12 + 44 = 99.

+	40	0	4	1/3
2/3	40 2/3	2/3	4 2/3	1
-2	38	-2	2	-1 2/3
12	52	12	16	12 1/3
44	84	44	48	44 1/3