

### Choose Your Method – Integrate These

$\int_a^{2a} \frac{x^2 + 1}{x} dx$	$\int_0^1 \frac{1}{1+x} dx$	$\int_0^1 \frac{x}{x+1} dx$	$\int_{-\frac{\pi}{6}}^{\frac{\pi}{3}} x \cos 3x dx$	$\int_a^{2a} \frac{3x^2 + 1}{x^3 + x} dx$	$\int_2^3 \frac{x}{(1-x)^2} dx$
$\int_0^{2\pi} \cos^2 x dx$	$\int_{-\frac{5}{2}}^{-2} (2x+5)^{10} dx$	$\int_0^1 \frac{x^7}{(x^4+2)^2} dx$	$\int_0^{\frac{\pi}{2}} x^2 \sin 4x dx$	$\int_4^6 \frac{x-2}{2x^2-8x+3} dx$	$\int_0^{0.5} \frac{1}{1-x^2} dx$
$\int_0^{\frac{\pi}{4}} \cos^3 2x dx$	$\int_{-\frac{4}{9}}^{-\frac{1}{3}} \sqrt{9x+4} dx$	$\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} 1 + \tan^2 x dx$	$\int_0^{\frac{1}{3}} x e^{-3x} dx$	$\int_1^e \frac{x+x^{-1}}{x^2+2\ln x} dx$	$\int_6^7 \frac{x-9}{(x-3)(x-5)} dx$
$\int_0^{\frac{1}{2}} \left(\frac{e^x + e^{-x}}{2}\right)^2 dx$	$\int_0^{2\sqrt{2}} x^{\frac{1}{3}} (x^{\frac{4}{3}} - 2)^2 dx$	$\int_0^{\frac{\pi}{2}} \frac{1}{(1+2\tan x)^2 \cos^2 x} dx$	$\int_{\frac{1}{3}}^1 \ln 3x dx$	$\int_{\ln 2}^1 \frac{2e^x}{e^x + 3} dx$	$\int_2^6 \frac{1}{x(k-x)} dx$
	$\int_{\sqrt{2}}^2 \frac{25x^4}{(3-x^5)^2} dx$	$\int_{\pi}^{2\pi} \sin x \cos x dx$	$\int_{\ln 2}^{\ln 3} e^{4x} (2x+1) dx$		$\int_0^2 \frac{28+4x^2}{(3x+1)(5-x)^2} dx$
	$\int_{\sqrt{2}}^{\sqrt{3}} 2x(4-3x^2)^5 dx$	$\int_0^{\frac{\pi}{2}} \cos x e^{\sin x} dx$	$\int_a^{2a} x^3 \ln x dx$		$\int_4^5 \frac{3x-5}{x-k} dx$
		$\int_0^{\frac{1}{2}} 4x \ln(2x+1) dx$			
		$\int_0^1 x e^{x^2} dx$			

### Choose Your Method – Answers without Limits

$\frac{x^2}{2} + \ln x$	$\ln(x+1)$	$x - \ln(x+1)$	$\frac{3x \sin 3x + \cos 3x}{9}$	$\ln(x^3 + x)$	$\frac{1}{1-x} + \ln(x-1)$
$\frac{x}{2} + \frac{\sin 2x}{4}$	$\frac{(2x+5)^{11}}{22}$	$\frac{1}{2x^4+4} + \frac{\ln(x^4+2)}{4}$	$\frac{(1-8x^2)\cos 4x + 4x \sin 4x}{32}$	$\frac{\ln(2x^2 - 8x + 3)}{4}$	$\frac{\ln(x+1) - \ln(1-x)}{2}$
$\frac{9 \sin 2x + \sin 6x}{24}$	$\frac{2(9x+4)^{\frac{3}{2}}}{27}$	$\tan x$	$\frac{-3x-1}{9e^{3x}}$	$\frac{\ln(x^2 + 2\ln x)}{2}$	$3 \ln(x-3) - 2 \ln(x-5)$
$\frac{4x - e^{-2x} + e^{2x}}{8}$	$\frac{(x^{\frac{4}{3}} - 2)^3}{4}$	$\frac{-1}{2(1+2\tan x)}$ $= \frac{\cos x}{2(\cos x + 2\sin x)}$	$x(\ln 3x - 1)$	$2 \ln(e^x + 3)$	$\frac{\ln x - \ln(x-k)}{k}$
	$\frac{5}{3-x^5}$	$\frac{1-2\cos^2 x}{4}$	$\frac{e^{4x}}{8}(4x+1)$		$\frac{8}{5-x} + \ln(x-5) + \frac{\ln(3x+1)}{3}$
	$-\frac{(4-3x^2)^6}{18}$	$e^{\sin x}$	$\frac{x^4(4\ln x - 1)}{16}$		$3(x-k) + 4 \ln(x-k)$
		$\frac{(2x+1)}{4}(-2x)$ $+ (4x-2)\ln(2x+1) + 3$			
		$\frac{e^{x^2}}{2}$			

**Choose Your Method – Answers as Definite Integrals**

$\frac{3a^2}{2} + \ln 2$	$\ln 2$	$1 - \ln 2$	$\frac{-2 - \pi}{18}$	$\ln\left(\frac{8a^2 + 2}{a^2 + 1}\right)$	$\frac{1}{2} + \ln 2$
$\pi$	$\frac{1}{22}$	$\frac{1}{12}\left(\ln\left(\frac{27}{8}\right) - 1\right)$	$-\pi^2$	$\frac{\ln 3}{2}$	$\frac{\ln 3}{2}$
$\frac{1}{3}$	$\frac{2}{27}$	$\frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$	$\frac{e - 2}{9e}$	$\frac{\ln(e^2 + 2)}{2}$	$-\ln\left(\frac{27}{16}\right)$
0.5438	4	-0.5	$\ln 3 - \frac{2}{3}$	$2\ln\left(\frac{e + 3}{5}\right)$	$\frac{2\ln 6}{7}$
	$\frac{20(16 + 29\sqrt{2})}{667}$	0	$\frac{65 - 64\ln 2 + 324\ln 3}{8}$		$\frac{16 - 15\ln\left(\frac{5}{3}\right) + 5\ln 7}{15}$
	$-\frac{1729}{2}$	$e - 1$	$\frac{a^4(60\ln a - 15 + 16\ln 16)}{16}$		$(5 - 3k)\ln\left(\frac{4 - k}{5 - k}\right) + 3$
		0.25			
		$\frac{e - 1}{2}$			

Choose the method for integration.

In each case, decide whether you need substitution, by parts, or neither (what instead, or a combo?!)

$\int x e^{-x} dx$	$\int x \sqrt{x+1} dx$	$\int \sin x \cos^3 x dx$	$\int \frac{1}{1+\sqrt{x}} dx$
$\int \cos^2 x + 1 dx$	$\int \frac{2}{x^2 + 4x + 3} dx$	$\int x^4 \ln x dx$	$\int \sqrt{1-x^2} dx$