

Find each of the following indefinite integrals.

Problem	Rule(s) Used	Integral Answer
1.) $\int 1 + \frac{1}{a^2} - \frac{3}{a^4} da$	<ul style="list-style-type: none"> <li>• CONSTANT</li> <li>• CONSTANT MULT.</li> <li>• POWER</li> <li>• SUM/DIFF</li> </ul>	$\int 1 + a^{-2} - 3a^{-4} da = a - a^{-1} + a^{-3} + c$ $= \boxed{a - \frac{1}{a} + \frac{1}{a^3} + c}$
2.) $\int x^4 - 7x^3 + 6x^2 + 10x + 1 \cdot dx$	SAME AS #1	$= \boxed{\frac{1}{5}x^5 - \frac{7}{4}x^4 + 2x^3 + 5x^2 + 1x + c}$
3.) $\int 4y^{\frac{4}{3}} - y^{\frac{1}{3}} + 2y^{\frac{2}{3}} \cdot dy$	SAME AS #1	$= \boxed{\frac{12}{7}y^{\frac{7}{3}} - \frac{3}{4}y^{\frac{4}{3}} + 6y^{\frac{5}{3}} + c}$
4.) $\int \frac{x^5 - 7x^2 + 6}{2\sqrt{x}} \cdot dx$	<ul style="list-style-type: none"> <li>• CONSTANT MULT.</li> <li>• POWER</li> <li>• SUM/DIFF</li> </ul>	$= \int \frac{1}{2}x^{\frac{9}{2}} - \frac{7}{2}x^{\frac{3}{2}} + 3x^{-\frac{1}{2}} dx$ $= \boxed{\frac{1}{11}x^{\frac{11}{2}} - \frac{7}{5}x^{\frac{5}{2}} - 6x^{\frac{1}{2}} + c}$
5.) $\int \cos(3\theta) - \sec^2(3\theta) \cdot d\theta$	<ul style="list-style-type: none"> <li>• TRIG</li> <li>• SUM/DIFF</li> <li>• CHAIN *</li> </ul>	$= \boxed{\frac{1}{3} \sin(3\theta) - \frac{1}{3} \tan(3\theta) + c}$
6.) $\int \frac{4}{3x-1} \cdot dx$	<ul style="list-style-type: none"> <li>• <math>x^{-1} / \ln x</math></li> <li>• CHAIN</li> </ul>	$= \boxed{\frac{4}{3} \ln  3x-1  + c}$
7.) $\int e^{3z} (4e^{3z+2} - 3e^z) \cdot dz$	<ul style="list-style-type: none"> <li>• <math>e^x</math></li> <li>• SUM/DIFF</li> <li>• CHAIN</li> </ul>	$= \int 4e^{6z+2} - 3e^{4z} dz$ $= \boxed{\frac{2}{3}e^{6z+2} - \frac{3}{4}e^{4z} + c}$
8.) $\int 3x(x-1)^3 \cdot dx$	SAME AS #1	$= \int 3x(x^3 - 3x^2 + 3x - 1) dx$ $= \int 3x^4 - 9x^3 + 9x^2 - 3x dx = \boxed{\frac{3}{5}x^5 - \frac{9}{4}x^4 + 3x^3 - \frac{3}{2}x^2 + c}$