

Integrate the following functions with respect to x:

(1) $\frac{x^4 + x^2 + 1}{x^2 + 1}$	(2) $\frac{x^6 + 2}{x^2 + 1}$	(3) $\frac{x^4}{x^2 + 1}$
(4) $\left[ \left( \log \frac{1}{2} \right)^2 - x^2 \right]^{-\frac{1}{2}}$	(5) $\frac{\sin x}{1 - \sin x}$	(6) $\frac{e^{2x} - 1}{e^{2x} + 1}$
(7) $\frac{1}{\cos^2 x \sin^2 x}$	(8) $\frac{1}{a^2 \cos^2 x + b^2 \sin^2 x}$	(9) $\frac{1}{1 + \tan x}$
(10) $\frac{1}{x \sqrt{1 - x^3}}$	(11) $\frac{x^2 - 1}{x^4 + 1}$	(12) $\frac{\sin x \cos x}{3 \sin^2 x - 4 \cos^2 x}$
(13) $\frac{\sqrt{1 + \cos 2x}}{(\pi/2 < x < \pi)}$	(14) $\frac{x \tan^{-1} x^2}{1 + x^4}$	(15) $\frac{\sin x}{\sqrt{1 + \sin x}} (0 < x < \pi)$
(16) $\frac{\sqrt{1 - \sin 2x}}{(-\pi/4 < x < \pi/4)}$	(17) $\sqrt{\sin x} \sin 2x$	(18) $\cot^6 x$
(19) $\frac{\cos^3 x}{\sin^2 x}$	(20) $\frac{1}{\sin(x - a) \sin(x - b)}$	(21) $\sin^2 x \cos^4 x$
(22) $\frac{x}{\sqrt{1 - x^3}}$	(23) $\frac{1}{5 + 4 \cos x + 3 \sin x}$	(24) $\frac{1}{\frac{1}{x^2} - \frac{1}{x^3}}$
(25) $\sqrt{\frac{1 - x}{1 + x}}$	(26) $\frac{\cos x}{\sqrt{1 - \cos x}} (0 < x < \pi)$	(27) $\frac{\sqrt{5 - x}}{x}$
(28) $\frac{1}{\frac{3}{(x - 1)^2} - \frac{1}{(x - 2)^2}}$	(29) $\sin^2 x \cos 2x$	(30) $\frac{3x + 1}{2x^2 + x + 1}$

(31) $\frac{1}{x\sqrt{x^4 - a^4}}$	(32) $\frac{1}{\sqrt{(x-1)(4-x)}}$	(33) $\frac{\sqrt{25-x^2}}{x^2}$
(34) $\frac{1}{x\sqrt{2ax-x^2}}$ ( $0 < x < 2a$ )	(35) $\cos x \sin^2 2x$	(36) $\frac{3x+1}{\sqrt{8-2x-x^2}}$
(37) $x^2 e^{3x}$	(38) $\sqrt{(3x-1)(x+2)}$	(39) $5 e^{2x-1}$
(40) $\frac{x^2}{x^4+1}$	(41) $x \sin x \cos 3x$	(42) $x\sqrt{2ax-x^2}$
(43) $\sin^{-1} \frac{x}{\sqrt{1+x^2}}$	(44) $\frac{1}{x+\sqrt{-1}}$	(45) $\cos^{-1} \frac{1-x^2}{1+x^2}$ ( $x < 0$ )
(46) $\frac{x^3}{(1+x^2)^{\frac{9}{2}}}$	(47) $\frac{x^2}{(x^2-a^2)^{\frac{3}{2}}}$ ( $x > 0, a > 0$ )	(48) $\frac{x^2+1}{(x+1)^2} e^x$
(49) $\frac{\sin 5x}{\sin x}$	(50) $x^2 \tan^{-1} x$	(51) $x \sin^2 x$
(52) $x \sec^2 x \tan x$	(53) $e^{-x} \sin^2 2x$	(54) $\frac{1}{x^4-1}$
(55) $2^x \cos^2 x$	(56) $\sec^4 x$	(57) $\frac{x^2}{(x^3-1)(x^3+4)}$
(58) $e^{2x} \sin 3x \sin x$	(59) $\sec^3 x$	(60) $\frac{x}{(3x^2+2)(x-2)}$

(61) $\frac{x^3}{(x^2 + 2)(x^2 + 5)}$	(62) $\frac{1}{6e^{2x} + 5e^x + 1}$	(63) $\frac{1}{(x - 1)(x^2 + 4)}$
(64) $\frac{\cos^{-1}\sqrt{x} - \sin^{-1}\sqrt{x}}{\cos^{-1}\sqrt{x} + \sin^{-1}\sqrt{x}}$	(65) $\frac{\sqrt{\sin x}}{\cos x}$	(66) $x^2 (\log x)$
(67) $\frac{x}{(x^2 + a^2)(x^2 + b^2)}$	(68) $\frac{x^2 + 4x - 1}{x^3 - x}$	(69) $\frac{x^2}{(x^2 + 1)(x^2 + 2)}$
(70) $\frac{\sqrt{1 - \sin x}}{1 + \cos x} e^{-\frac{x}{2}}$ ( $0 < x < \pi/2$ )	(71) $\frac{1}{x(x^3 + 1)}$	(72) $\frac{\sin x}{\sin 4x}$
(73) $\frac{1}{\cos x (1 + 2 \sin x)}$	(74) $\frac{1}{\sin x + \sin 2x}$	(75) $\sqrt{\tan x}$
(76) $\frac{x}{\sqrt{a - x}}$	(77) $\frac{x^4 + x^2 + 1}{x^2 + x + 1}$	(78) $(1 + x)\sqrt{1 - x}$
(79) $\sin x \cos x (\sin 2x + \cos 2x)$	(80) $\frac{\sin x + \cos x}{\sqrt{\sin 2x}}$	(81) $x \sqrt{\frac{a^2 - x^2}{a^2 + x^2}}$
(82) $\frac{\tan x}{\sqrt{3 - 4 \tan^2 x}}$	(83) $\frac{1}{(e^x + e^{-2x})^{\frac{3}{2}}}$	(84) $\frac{1}{(2x + 1)\sqrt{4x + 3}}$
(85) $\frac{1 + x^2}{\sqrt{1 - x^2}}$	(86) $\frac{1}{(1 + x)\sqrt{1 - x^2}}$	(87) $\frac{1}{\cos 2x + 3 \sin^2 x}$
(88) $\frac{6x + 7}{\sqrt{(x - 5)(x - 4)}}$	(89) $\sin^4 3x \cos^2 3x$	(90) $\sqrt{\sec x + 1}$ $0 < x < \pi, x \neq \pi/2$

( 91 ) $\frac{1}{a^2 - b^2 \cos^2 x}$ ( $a > b$ )	( 92 ) $\sqrt{\tan x} + \sqrt{\cot x}$	( 93 ) $\frac{\tan x}{1 + \tan x + \tan^2 x}$
( 94 ) $\frac{1}{(1+x)\sqrt{1+2x-x^2}}$	( 95 ) $\frac{x}{(x^2+4)\sqrt{x^2+1}}$	( 96 ) $\frac{x^2+1}{x^2+7x+1}$
( 97 ) $\frac{1}{\sin^4 x + \cos^4 x}$	( 98 ) $\sqrt{\cot x}$	( 99 ) $\frac{\sin x + \cos x}{9 + 16 \sin 2x}$
( 100 ) $\frac{1}{\sec x + \operatorname{cosec} x}$	( 101 ) $\frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}}$	( 102 ) $\frac{\sqrt{a} - \sqrt{x}}{1 - \sqrt{ax}}$
( 103 ) $\frac{1}{x(x^n + 1)}$	( 104 ) $\frac{1}{\sin x + \sec x}$	( 105 ) $\tan^{-1} \sqrt{x}$
( 106 ) $\frac{1 + \sqrt{x}}{1 + x^4}$	( 107 ) $\frac{x}{1 + \sin x}$	( 108 ) $\sin \sqrt{x}$
( 109 ) $\tan x \tan 2x \tan 3x$	( 110 ) $\frac{1}{x^3 \sqrt{x^4 - 1}}$	( 111 ) $x \sin^3 x$
( 112 ) $\tan^{-1} \sqrt{\frac{x}{a-x}}$	( 113 ) $\frac{x(x+1)(x+2)}{(x+3)(x+4)(x+5)}$	( 114 ) $\sqrt{\frac{a+x}{x}}$
( 115 ) $\frac{\tan x + \tan^3 x}{1 + \tan^3 x}$	( 116 ) $\frac{x^2}{(x \sin x + \cos x)^2}$	( 117 ) $\sqrt{\frac{x^{n-2}}{1-x^n}}$
( 118 ) $\frac{1}{x^2(1+x^2)^2}$	( 119 ) $\sin^{-1} \sqrt{\frac{x}{a+x}}$	( 120 ) $\frac{1}{5 - 2 \cos x - 2\sqrt{3} \sin x}$

( 121 ) $\frac{\sqrt{\sin(x-a)}}{\sqrt{\sin(x+a)}}$	( 122 ) $\frac{3+2\tan x}{4+3\tan x}$	( 123 ) $\sqrt{\frac{1-\sqrt{x}}{1+\sqrt{x}}}$
( 124 ) $\frac{1}{\sqrt{\sin^3 x \sin(x+\alpha)}}$	( 125 ) $\sqrt{\frac{x-\alpha}{\beta-x}}$	( 126 ) $\frac{\sin^2 x}{1+\cos^2 x}$
( 127 ) $\frac{1}{1+\tan^4 x}$	( 128 ) $\log \log x + \frac{1}{(\log x)^2}$	( 129 ) $\frac{x^7}{x^{12}-1}$
( 130 ) $\frac{1}{(\sin x - 2\cos x)(2\sin x + \cos x)}$	( 131 ) $\cot^{-1}(1-x^2)$	( 132 ) $\frac{\sin^3 x}{(1+\cos^2 x)\sqrt{1+\cos^2 x+\cos^4 x}}$
( 133 ) $x(\tan^{-1} x)^2$	( 134 ) $\frac{1}{\sqrt[4]{(x-1)^3(x+2)^5}}$	( 135 ) $\frac{x^3}{(x-1)(x-2)(x-3)}$
( 136 ) $\frac{\sin x - \cos x}{(\sin x + \cos x)\sqrt{\sin x \cos x + \sin^2 x \cos^2 x}}$	( 137 ) $\frac{\sqrt{\cos 2x}}{\sin x}$	

Answers

( Add constant C to all answers )

Answer: [ 1 ] $\frac{x^3}{3} + \tan^{-1} x$	Answer: [ 2 ] $\frac{x^5}{5} - \frac{x^3}{3} + x + \tan^{-1} x$	Answer: [ 3 ] $\frac{x^3}{3} - x + \tan^{-1} x$
Answer: [ 4 ] $\sin^{-1} \frac{x}{\log 2}$	Answer: [ 5 ] $\sec x + \tan x - x$	Answer: [ 6 ] $\log(e^x + e^{-x})$

Answer: [ 7 ] $\tan x - \cot x$	Answer: [ 8 ] $\frac{1}{ab} \tan^{-1} \left[ \frac{b}{a} \tan x \right]$	Answer: [ 9 ] $\frac{x}{2} + \frac{1}{2} \log   \cos x + \sin x  $
Answer: [ 10 ] $\frac{1}{3} \log \left  \frac{\sqrt{1-x^3}-1}{\sqrt{1-x^3}+1} \right $	Answer: [ 11 ] $\frac{1}{2\sqrt{2}} \log \left  \frac{x^2 - \sqrt{2}x + 1}{x^2 + \sqrt{2}x + 1} \right $	Answer: [ 12 ] $\frac{1}{14} \log   3 \sin x - 4 \cos^2 x  $
Answer: [ 13 ] $-\sqrt{2} \sin x$	Answer: [ 14 ] $\frac{1}{4} (\tan^{-1} x^2)^2$	Answer: [ 15 ] $-2\sqrt{2} \sin \left( \frac{\pi}{4} \frac{x}{2} \right) - \frac{1}{2} \log \left  \tan \left( \frac{\pi}{8} - \frac{x}{4} \right) \right $
Answer: [ 16 ] $\sin x + \cos x$	Answer: [ 17 ] $\frac{4 (\sin x)^{\frac{5}{2}}}{5}$	Answer: [ 18 ] $-\frac{\cot^5 x}{5} + \frac{\cot^3 x}{3} - \cot x - x$
Answer: [ 19 ] $-\frac{1}{\sin x} - \sin x$	Answer: [ 20 ] $\frac{1}{\sin(a-b)} \log \left  \frac{\sin(x-a)}{\sin(x-b)} \right $	Answer: [ 21 ] $\frac{1}{192} (12x - 3 \sin 4x + 3 \sin 2x - \sin 6x)$
Answer: [ 22 ] $\frac{2}{3} \sin^{-1} x^{\frac{3}{2}}$	Answer: [ 23 ] $-\frac{2}{\tan \frac{x}{2} + 3}$	Answer: [ 24 ] $2x^{\frac{1}{2}} - 3x^{\frac{1}{3}} + 6x^{\frac{1}{6}} - 6 \log(1 + x^{\frac{1}{6}})$
Answer: [ 25 ] $\sin^{-1} x + \sqrt{1-x^2}$	Answer: [ 26 ] $\sqrt{2} \log \left  \tan \frac{x}{4} \right  + 2\sqrt{2} \cos \frac{x}{2}$	Answer: [ 27 ] $2\sqrt{5-x} - \sqrt{5} \log \left  \frac{\sqrt{5-x} + \sqrt{5}}{\sqrt{5-x} - \sqrt{5}} \right $
Answer: [ 28 ] $2\sqrt{\frac{x-2}{x-1}}$	Answer: [ 29 ] $\frac{\sin 2x}{4} - \frac{x}{4} - \frac{\sin 4x}{16}$	Answer: [ 30 ] $\frac{3}{4} \log   2x^2 + x + 1   + \frac{1}{2\sqrt{7}} \tan^{-1} \frac{4x+1}{\sqrt{7}}$
Answer: [ 31 ] $\frac{1}{2a^2} \sec^{-1} \frac{x^2}{a^2}$	Answer: [ 32 ] $2 \sin^{-1} \sqrt{\frac{x-1}{3}}$	Answer: [ 33 ] $-\frac{\sqrt{25-x^2}}{x} - \sin^{-1} \frac{x}{5}$

<p>Answer:</p> <p>[34] <math>-\frac{1}{a}\sqrt{\frac{2a-x}{a}}</math></p>	<p>Answer:</p> <p>[35] <math>\frac{4}{3}\sin^3 x - \frac{4}{5}\sin^5 x</math></p>	<p>Answer:</p> <p>[36] <math>-3\sqrt{8-2x-x^2} - 2\sin^{-1}\frac{x+1}{3}</math></p>
<p>Answer:</p> <p>[37] <math>\left[\frac{x^2}{3} - \frac{2x}{9} + \frac{2}{27}\right]e^{3x}</math></p>	<p>Answer:</p> <p>[38] <math>\frac{6x+5}{12}\sqrt{(3x-1)(x+2)} - \frac{49}{24\sqrt{3}}\log\left \frac{6x+5}{2\sqrt{3}} + \sqrt{(3x-1)(x+2)}\right </math></p>	
<p>Answer:</p> <p>[39] <math>\frac{5^x e^{2x-1}}{(\log 5 + 2)}</math></p>	<p>Answer:</p> <p>[40] <math>\frac{1}{2\sqrt{2}}\tan^{-1}\frac{x^2-1}{\sqrt{2}x} + \frac{1}{4\sqrt{2}}\log\left \frac{x^2-\sqrt{2}x+1}{x^2+\sqrt{2}x+1}\right </math></p>	
<p>Answer:</p> <p>[41] <math>\frac{\sin 4x}{32} - \frac{\sin 2x}{8} + \frac{x}{4}\cos 2x - \frac{x}{8}\cos 4x</math></p>	<p>Answer:</p> <p>[42] <math>\frac{a^3}{2}\sin^{-1}\frac{x-a}{a} + \frac{a}{2}(x-a)\sqrt{2ax-x^2} - \frac{1}{3}(2ax-x^2)^{\frac{3}{2}}</math></p>	
<p>Answer:</p> <p>[43] <math>x\tan^{-1}x - \frac{1}{2}\log(1+x^2)</math></p>	<p>Answer:</p> <p>[44] <math>\log x+\sqrt{x-1}  - \frac{2}{\sqrt{3}}\tan^{-1}\frac{2\sqrt{x-1}+1}{\sqrt{3}}</math></p>	
<p>Answer:</p> <p>[45] <math>-2\left[x\tan^{-1}x - \log\sqrt{1+x^2}\right]</math></p>	<p>Answer:</p> <p>[46] <math>\frac{1}{7(1+x^2)^{\frac{7}{2}}} - \frac{1}{5(1+x^2)^{\frac{5}{2}}}</math></p>	
<p>Answer:</p> <p>[47] <math>\log x+\sqrt{x^2-a^2}  - \frac{x}{\sqrt{x^2-a^2}}</math></p>	<p>Answer:</p> <p>[48] <math>e^x\left[\frac{x-1}{x+1}\right]</math></p>	<p>Answer:</p> <p>[49] <math>x + \sin 2x + \frac{\sin 4x}{2}</math></p>
<p>Answer:</p> <p>[50] <math>\frac{x^3}{3}\tan^{-1}x - \frac{1}{6}[x^2 - \log(1+x^2)]</math></p>	<p>Answer:</p> <p>[51] <math>\frac{x^2}{4} - \frac{x\sin 2x}{4} - \frac{\cos 2x}{8}</math></p>	<p>Answer:</p> <p>[52] <math>\frac{x\sec^2 x}{2} - \frac{\tan x}{2}</math></p>
<p>Answer:</p> <p>[53] <math>-\frac{e^{-x}}{2}\left[1 - \frac{1}{\sqrt{17}}\cos(4x + \tan^{-1}4)\right]</math></p>	<p>Answer:</p> <p>[54] <math>\frac{1}{4}\log\left \frac{x-1}{x+1}\right  - \frac{1}{2}\tan^{-1}x</math></p>	

<p>Answer:</p> <p>[55] <math>\frac{2^x - 1}{\log 2} + \frac{2^{x-1} \cos \left[ 2x - \tan^{-1} \frac{2}{\log 2} \right]}{\sqrt{(\log 2)^2 + 4}}</math></p>		<p>Answer:</p> <p>[56] <math>\tan x + \frac{\tan^3 x}{3}</math></p>
<p>Answer:</p> <p>[57] <math>\frac{1}{15} \log \left  \frac{x^3 - 1}{x^3 + 4} \right </math></p>	<p>Answer:</p> <p>[58] <math>\frac{e^{2x}}{8} (\sin 2x + \cos 2x) - \frac{e^{2x}}{20} (\cos 4x + 2 \sin 4x)</math></p>	
<p>Answer:</p> <p>[59] <math>\frac{1}{2} (\sec x \tan x + \log  \sec x + \tan x )</math></p>	<p>Answer:</p> <p>[60] <math>\frac{\log  x - 2 }{7} - \frac{\log  3x^2 + 2 }{14} + \frac{1}{7\sqrt{6}} \tan^{-1} \frac{\sqrt{3} x}{\sqrt{2}}</math></p>	
<p>Answer:</p> <p>[61] <math>\frac{5}{6} \log(x^2 + 5) - \frac{1}{3} \log(x^2 + 2)</math></p>	<p>Answer:</p> <p>[62] <math>\log \left[ e^{-3x} (3e^x + 1)^{-3} (2e^x + 1)^2 \right]</math></p>	
<p>Answer:</p> <p>[63] <math>\frac{1}{5} \log  x - 1  - \frac{1}{10} \log(x^2 + 4) - \frac{1}{1} \tan^{-1} \frac{x}{2}</math></p>	<p>Answer:</p> <p>[64] <math>\frac{2x - 1}{\pi} (\cos^{-1} \sqrt{x} - \sin^{-1} \sqrt{x}) - \frac{2}{\pi} \sqrt{x - x^2}</math></p>	
<p>Answer:</p> <p>[65] <math>\frac{1}{2} \log \left  \frac{1 + \sqrt{\sin x}}{1 - \sqrt{\sin x}} \right  - \tan^{-1} \sqrt{\sin x}</math></p>	<p>Answer:</p> <p>[66] <math>\frac{x^3}{10} [3 \cos(\log x) + \sin(\log x)]</math></p>	
<p>Answer:</p> <p>[67] <math>\frac{1}{2(a^2 - b^2)} \log \left  \frac{x^2 + b^2}{x^2 + a^2} \right </math></p>	<p>Answer:</p> <p>[68] <math>\log \left  \frac{x(x - 1)^2}{(x + 1)^2} \right </math></p>	<p>Answer:</p> <p>[69] <math>-\tan^{-1} x + \sqrt{2} \tan^{-1} \frac{x}{\sqrt{2}}</math></p>
<p>Answer:</p> <p>[70] <math>-e^{-\frac{x}{2}} \sec \frac{x}{2}</math></p>	<p>Answer:</p> <p>[71] <math>\frac{1}{3} \log \left  \frac{x^3}{x^3 + 1} \right </math></p>	<p>Answer:</p> <p>[72] <math>\frac{1}{8} \log \left  \frac{\sin x - 1}{\sin x + 1} \right  - \frac{1}{4\sqrt{2}} \log \left  \frac{\sqrt{2} \sin x - 1}{\sqrt{2} \sin x + 1} \right </math></p>
<p>Answer:</p> <p>[73] <math>-\frac{1}{2} \log(1 + \sin x) - \frac{1}{6} \log(1 - \sin x) + \frac{2}{3} \log  1 + 2 \sin x </math></p>		



Answer: [74] $\frac{1}{6} \log(1 - \cos x) + \frac{1}{2} \log(1 + \cos x) - \frac{2}{3} \log 1 + 2 \cos x $		
Answer: [75] $\frac{1}{\sqrt{2}} \tan^{-1} \left[ \frac{\tan x - 1}{\sqrt{2 \tan x}} \right] + \frac{1}{2\sqrt{2}} \log \left  \frac{\tan x + 1 - \sqrt{2 \tan x}}{\tan x + 1 + \sqrt{2 \tan x}} \right $	Answer: [76] $-2a(a-x)^{\frac{3}{2}} + \frac{2}{3}(a-x)^{\frac{3}{2}}$	
Answer: [77] $\frac{x^3}{3} - \frac{x^2}{2} + x$	Answer: [78] $-\frac{4}{3}(1-x)^{\frac{3}{2}} + \frac{2}{5}(1-x)^{\frac{5}{2}}$	Answer: [79] $\frac{x}{4} - \frac{\sin 4x}{16} - \frac{\cos 4x}{16}$
Answer: [80] $\sin^{-1}(\sin x - \cos x)$	Answer: [81] $\frac{1}{2} \left[ \sqrt{a^4 - x^4} a^2 \cos^{-1} \frac{x^2}{a^2} \right]$	Answer: [82] $\tan^{-1} \sqrt{3 + 4 \tan^2 x}$
Answer: [83] $-\frac{2}{3\sqrt{e^{3x} + 1}}$	Answer: [84] $\frac{1}{2} \log \left  \frac{\sqrt{x+3} - 1}{\sqrt{4x} \sqrt{3+1}} \right $	Answer: [85] $\frac{3}{2} \sin^{-1} x - \frac{x \sqrt{1-x^2}}{2}$
Answer: [86] $-\sqrt{\frac{1-x}{1+x}}$	Answer: [87] $\frac{1}{\sqrt{2}} \tan^{-1}(\sqrt{2} \tan x)$	Answer: [88] $6\sqrt{x^2 - 9x + 20} + 34 \log \left  x - \frac{9}{2} + \sqrt{x^2 - 9x + 20} \right $
Answer: [89] $\frac{x}{16} - \frac{\sin 12}{192} - \frac{\sin^3 6x}{144}$	Answer: [90] $2 \sin^{-1} \left[ \sqrt{2} \sin \frac{x}{2} \right]$	Answer: [91] $\frac{1}{a \sqrt{a^2 - b^2}} \tan^{-1} \left[ \frac{a}{\sqrt{a^2 - b^2}} \tan x \right]$
Answer: [92] $\sqrt{2} \sin^{-1}(\sin x - \cos x)$	Answer: [93] $x - \frac{2}{\sqrt{3}} \tan^{-1} \left[ \frac{2 \tan x + 1}{\sqrt{3}} \right]$	Answer: [94] $\frac{1}{\sqrt{2}} \sin^{-1} \left[ \frac{\sqrt{2} x}{1+x} \right]$
Answer: [95] $\frac{1}{\sqrt{3}} \tan^{-1} \sqrt{\frac{x^2 + 1}{3}}$	Answer: [96] $\frac{1}{3} \tan^{-1} \left[ \frac{x^2 - 1}{3x} \right]$	Answer: [97] $\frac{1}{\sqrt{2}} \tan^{-1} \left[ \frac{\tan 2x}{\sqrt{2}} \right]$

<p>Answer:</p> <p>[98] <math>-\frac{1}{\sqrt{2}} \tan^{-1} \left[ \frac{\cot x - 1}{\sqrt{2} \cot x} \right] - \frac{1}{2\sqrt{2}} \log \left  \frac{\cot x - \sqrt{2} \cot x + 1}{\cot x + \sqrt{2} \cot x + 1} \right </math></p>	
<p>Answer:</p> <p>[99] <math>\frac{1}{40} \log \left  \frac{5 + 4(\sin x - \cos x)}{5 - 4(\sin x - \cos x)} \right </math></p>	<p>Answer:</p> <p>[100] <math>\frac{1}{2} (\sin x - \cos x) - \frac{1}{2\sqrt{2}} \log \left  \tan \left[ \frac{x}{2} + \frac{\pi}{8} \right] \right </math></p>
<p>Answer:</p> <p>[101] <math>-\frac{3x}{2} + \frac{35}{36} \log  9e^{2x} - 4 </math></p>	<p>Answer:</p> <p>[102] <math>\frac{2}{3} \left[ (1 - a) \log  1 - \sqrt{ax}  + (a - 2)(1 - \sqrt{ax}) + \frac{1}{2}(1 - \sqrt{ax})^2 \right]</math></p>
<p>Answer:</p> <p>[103] <math>\frac{1}{n} \log \left  \frac{x^n}{x^n + 1} \right </math></p>	<p>Answer:</p> <p>[104] <math>\frac{1}{2\sqrt{3}} \log \left  \frac{\sqrt{3} + (\sin x - \cos x)}{\sqrt{3} - (\sin x - \cos x)} \right  + \tan^{-1} (\sin x + \cos x)</math></p>
<p>Answer:</p> <p>[105] <math>(x + 1) \tan^{-1} \sqrt{x} - \sqrt{x}</math></p>	<p>Answer:</p> <p>[106] <math>\frac{4}{5} x^{\frac{5}{4}} - x + \frac{8}{3} x^{\frac{3}{4}} - 4x^{\frac{1}{2}} + 8x^{\frac{1}{4}} - 8 \log \left  x^{\frac{1}{4}} + 1 \right </math></p>
<p>Answer:</p> <p>[107] <math>x(\tan x - \sec x) \log  1 + \sin x </math></p>	<p>Answer:</p> <p>[108] <math>2 \left[ \sin \sqrt{x} - \sqrt{x} \cos \sqrt{x} \right]</math></p>
<p>Answer:</p> <p>[109] <math>\frac{1}{3} \log  \sec 3x  - \frac{1}{2} \log  \sec 2x  - \log  \sec x </math></p>	<p>Answer:</p> <p>[110] <math>\frac{1}{2} \sqrt{1 - x^{-4}}</math></p>
<p>Answer:</p> <p>[111] <math>\frac{3 \sin x}{4} - \frac{3x \cos x}{4} + \frac{x \cos 3x}{12} - \frac{\sin 3x}{36}</math></p>	<p>Answer:</p> <p>[112] <math>\left( \frac{2x - a}{2} \right) \sin^{-1} \sqrt{\frac{x}{a}} - \frac{1}{2} \sqrt{ax - x^2}</math></p>
<p>Answer:</p> <p>[113] <math>x - 3 \log  x + 3  + 24 \log  x + 4  - 30 \log  x + 5 </math></p>	<p>Answer:</p> <p>[114] <math>\sqrt{ax + x^2} + a \log  \sqrt{x} + \sqrt{x + a} </math></p>

Answer: [115] $-\frac{1}{3} \log  1 + \tan x  + \frac{1}{6} \log  \tan^2 x - \tan x + 1  + \frac{1}{\sqrt{3}} \tan^{-1} \frac{2 \tan x - 1}{\sqrt{3}}$		
Answer: [116] $\frac{\sin x - x \cos x}{\cos x + x \sin x}$	Answer: [117] $\frac{2}{n} \sin^{-1} x^{\frac{n}{2}}$	Answer: [118] $-\frac{1}{x} - \frac{3}{2} \tan^{-1} x - \frac{x}{2(1-x^2)}$
Answer: [119] $(x + a) \tan^{-1} \sqrt{\frac{x}{a}} - \sqrt{ax}$		Answer: [120] $\frac{2}{3} \tan^{-1} \left[ 3 \tan \left( \frac{x}{2} - \frac{\pi}{6} \right) \right]$
Answer: [121] $\cos a \cos^{-1} \left[ \frac{\cos x}{\cos a} \right] - \sin a \log  \sin x + \sqrt{\sin^2 x - \sin^2 a} $		Answer: [122] $\frac{18x}{25} + \frac{1}{25} \log  4 \cos x + 3 \sin x $
Answer: [123] $\sqrt{x - x^2} - 2\sqrt{1-x} + \cos^{-1} \sqrt{x}$		Answer: [124] $-\frac{2}{\sin \alpha} \sqrt{\cos \alpha + \sin \alpha \cot x}$
Answer: [125] $-\sqrt{(\beta - x)(x - \alpha)} - (\beta - \alpha) \sin^{-1} \sqrt{\frac{\beta - x}{\beta - \alpha}}$		Answer: [126] $\frac{\sqrt{5}}{2} \tan^{-1} \left( \frac{2 \tan x}{\sqrt{5}} \right) - x$
Answer: [127] $\frac{x}{2} + \frac{1}{4\sqrt{2}} \log \left  \frac{\sqrt{2} + \sin 2x}{\sqrt{2} - \sin 2x} \right $		Answer: [128] $x \log \log  x  - \frac{x}{\log x}$
Answer: [129] $\frac{1}{12} \log  x^4 - 1  - \frac{1}{24} \log  x^8 + x^4 + 1  + \frac{1}{4\sqrt{3}} \tan^{-1} \left[ \frac{2x^4 + 1}{\sqrt{3}} \right]$		Answer: [130] $\frac{1}{5} \log \left  \frac{\tan x - 2}{2 \tan x + 1} \right $
Answer: [131] $x \cot^{-1} (1 - x + x^2) + \frac{1}{2} \log \left  \frac{x^2 - 2x + 2}{x^2 + 1} \right  + \tan^{-1} (x - 1)$		Answer: [132] $\tan^{-1} \sqrt{\sec^2 x + 1 + \cos^2 x}$
Answer: [133] $\frac{x^2}{2} (\tan^{-1} x)^2 - x \tan^{-1} x + \log  \sec (\tan^{-1} x)  + \frac{1}{2} (\tan^{-1} x)^2$		Answer: [134] $\frac{4}{3} \sqrt[4]{\frac{x - 1}{x + 2}}$
Answer: [135] $x + \frac{1}{2} \log  x - 1  - 8 \log  x - 2  + \frac{27}{2} \log  x - 3 $		Answer: [136] $\operatorname{cosec}^{-1} (1 + \sin 2x)$
Answer: [137] $\frac{1}{\sqrt{2}} \log \left  \frac{\sqrt{2} + \sqrt{1 - \tan^2 x}}{\sqrt{2} - \sqrt{1 - \tan^2 x}} \right  - \frac{1}{2} \log \left  \frac{1 + \sqrt{1 - \tan^2 x}}{1 - \sqrt{1 - \tan^2 x}} \right $		