

G7. Integrali indefiniti - Esercizi

Calcola i seguenti integrali indefiniti immediati.

- 1) $\int (x^2 + 2x + 1) dx$ $[\frac{x^3}{3} + x^2 + x + c]$
- 2) $\int (x^4 - 3x^2 + 3) dx$ $[\frac{x^5}{5} - x^3 + 3x + c]$
- 3) $\int (2x+3)^2 dx$ $[\frac{4x^3}{3} + 6x^2 + 9x + c]$
- 4) $\int (x-2)(x+2) dx$ $[\frac{x^3}{3} - 4x + c]$
- 5) $\int (2x^{-3} - x^{-2} + 3x^{-1}) dx$ $[-x^{-2} + x^{-1} + 3\ln|x| + c]$
- 6) $\int (x^{-5} + 2x^{-3} + x^{-1}) dx$ $[-\frac{x^{-4}}{4} - x^{-2} + \ln|x| + c]$
- 7) $\int (\frac{6}{x^3} - \frac{5}{x^2} + \frac{1}{x}) dx$ $[-\frac{3}{x^2} + \frac{5}{x} + \ln|x| + c]$
- 8) $\int (3x^2 + 2x - \frac{2}{x^2}) dx$ $[x^3 + x^2 + \frac{2}{x} + c]$
- 9) $\int (\frac{x^2 - 3x + 2}{x^4}) dx$ $[-\frac{1}{x} + \frac{3}{2x^2} - \frac{2}{3x^3} + c]$
- 10) $\int (\frac{x^5 - 3x^3 + 2x^2 - x}{x^2}) dx$ $[\frac{x^4}{4} - \frac{3x^2}{2} + 2x - \ln|x| + c]$
- 11) $\int \sqrt{x} dx$ $[\frac{2}{3}\sqrt{x^3} + c]$
- 12) $\int (\sqrt{x^7} + \sqrt{x^3}) dx$ $[\frac{2}{9}\sqrt{x^9} + \frac{2}{5}\sqrt{x^5} + c]$
- 13) $\int (\frac{1}{\sqrt{x}} + \frac{1}{\sqrt{x^3}}) dx$ $[2\sqrt{x} - \frac{2}{\sqrt{x}} + c]$
- 14) $\int (4\sqrt{x^3} - 5\sqrt{x^2}) dx$ $[\frac{4}{7}4\sqrt{x^7} - \frac{5}{7}5\sqrt{x^7} + c]$
- 15) $\int (\sqrt[3]{x^7} - \sqrt[5]{x^{10}} + x) dx$ $[\frac{3}{10}\sqrt[3]{x^{10}} - \frac{x^3}{3} + \frac{x^2}{2} + c]$
- 16) $\int (\frac{x^2 - x - 2}{\sqrt{x}}) dx$ $[\frac{2}{5}\sqrt{x^5} - \frac{2}{3}\sqrt{x^3} - 4\sqrt{x} + c]$
- 17) $\int (\sqrt{x} + \frac{1}{\sqrt[3]{x^2}}) dx$ $[\frac{2}{3}\sqrt{x^3} + 3\sqrt[3]{x} + c]$
- 18) $\int (\frac{2x^2 - x - 1}{\sqrt[5]{x}}) dx$ $[\frac{5}{7}\sqrt[5]{x^{14}} - \frac{5}{9}\sqrt[5]{x^9} - \frac{5}{4}\sqrt[5]{x^4} + c]$
- 19) $\int \frac{1}{x^2 - 4x + 4} dx$ $[-\frac{1}{x-2} + c]$
- 20) $\int 3(3x+2)^3 dx$ $[\frac{(3x+2)^4}{4} + c]$
- 21) $\int (x+2)^2 dx$ $[\frac{(x+2)^3}{3} + c]$
- 22) $\int \frac{2}{(x+1)^3} dx$ $[-\frac{1}{(x+1)^2} + c]$

- 23) $\int \frac{2}{(2x-5)^2} dx$ $[-\frac{1}{2x-5} + c]$
- 24) $\int 2x\sqrt{x^2+3} dx$ $[\frac{2}{3}\sqrt{(x^2+3)^3} + c]$
- 25) $\int 3\sqrt{1-3x} dx$ $[-\frac{2}{3}\sqrt{(1-3x)^3} + c]$
- 26) $\int (3x^2+2x-1)\cdot(3x+1) dx$ $[\frac{(3x^2+2x-1)^2}{4} + c]$
- 27) $\int \sqrt{2x-3} dx$ $[\frac{1}{3}\sqrt{(2x-3)^3} + c]$
- 28) $\int x\sqrt{2x^2+1} dx$ $[\frac{1}{6}\sqrt{(2x^2+1)^3} + c]$
- 29) $\int (x^2+\ln x)\cdot(2x+\frac{1}{x}) dx$ $[\frac{(x^2+\ln x)^2}{2} + c]$
- 30) $\int \frac{3x}{\sqrt{x^2-1}} dx$ $[3\sqrt{x^2-1} + c]$
- 31) $\int \frac{1}{\sqrt{x-3}} dx$ $[2\sqrt{x-3} + c]$
- 32) $\int \frac{x}{\sqrt[3]{2x^2-1}} dx$ $[\frac{3}{16}\sqrt[3]{(2x^2-1)^4} + c]$
- 33) $\int \frac{\ln x}{x} dx$ $[\frac{\ln^2 x}{2} + c]$
- 34) $\int \frac{x+1}{x^2+2x-3} dx$ $[\frac{\ln|x^2+2x-3|}{2} + c]$
- 35) $\int \frac{e^x}{e^x-1} dx$ $[\ln|e^x-1| + c]$
- 36) $\int \cos^2 x \cdot \sin x dx$ $[\frac{-\cos^3 x}{3} + c]$
- 37) $\int \cos x \cdot \sin x dx$ $[\frac{\sin^2 x}{2} + c]$
- 38) $\int \frac{1}{x-1} dx$ $[\ln|x-1| + c]$
- 39) $\int \frac{x+2}{x-1} dx$ $[x+3\ln|x-1| + c]$
- 40) $\int \operatorname{tg} x dx$ $[-\ln|\cos x| + c]$
- 41) $\int \operatorname{cotg} x dx$ $[\ln|\sin x| + c]$
- 42) $\int \frac{x^2}{x^3+1} dx$ $[\frac{1}{3}\ln|x^3+1| + c]$
- 43) $\int \frac{x^2-1}{x^3-3x} dx$ $[\frac{1}{3}\ln|x^3-3x| + c]$
- 44) $\int \frac{x-2}{3x-1} dx$ $[\frac{1}{3}x - \frac{5}{9}\ln|3x-1| + c]$
- 45) $\int \frac{x-2}{x+2} dx$ $[x-4\ln|x+2| + c]$
- 46) $\int \frac{x+1}{2x-5} dx$ $[\frac{1}{2}x + \frac{7}{4}\ln|2x-5| + c]$

- 47) $\int \frac{x}{x^2+1} dx$ $[\frac{1}{2} \ln|x^2+1| + c]$
- 48) $\int \frac{x^2}{1-x^3} dx$ $[-\frac{1}{3} \ln|1-x^3| + c]$
- 49) $\int \frac{3x-1}{2-x} dx$ $[-3x-5 \ln|2-x| + c]$
- 50) $\int \frac{3}{\cos^2 x} dx$ $[3 \operatorname{tg} x + c]$
- 51) $\int \operatorname{sen} 2x dx$ $[-\frac{1}{2} \cos 2x + c]$
- 52) $\int \frac{1}{\cos^2 2x} dx$ $[\frac{1}{2} \operatorname{tg} 2x + c]$
- 53) $\int \cos 4x dx$ $[\frac{1}{4} \operatorname{sen} 4x + c]$
- 54) $\int \frac{\cos 2x}{\operatorname{sen} x + \cos x} dx$ $[\operatorname{sen} x + \cos x + c]$
- 55) $\int \frac{x}{\cos^2(3x^2+4)} dx$ $[\frac{1}{6} \operatorname{tg}(3x^2+4) + c]$
- 56) $\int \operatorname{sen}(2x^2+x) \cdot (4x+1) dx$ $[-\cos(2x^2+x) + c]$
- 57) $\int \cos(3x^2-4) \cdot 5x dx$ $[\frac{5}{6} \operatorname{sen}(3x^2-4) + c]$
- 58) $\int \operatorname{sen}(e^x-1) \cdot e^x dx$ $[-\cos(e^x-1) + c]$
- 59) $\int \frac{1}{x^2} \cdot \cos \frac{1}{x} dx$ $[-\operatorname{sen} \frac{1}{x} + c]$
- 60) $\int x \cdot \cos x^2 dx$ $[\frac{1}{2} \operatorname{sen} x^2 + c]$
- 61) $\int \frac{3}{\cos^2(2x+1)} dx$ $[\frac{3}{2} \operatorname{tg}(2x+1) + c]$
- 62) $\int \operatorname{sen}\left(\frac{1}{2}x\right) dx$ $[-2 \cos\left(\frac{x}{2}\right) + c]$
- 63) $\int \frac{1}{\sqrt{1-x^2}} dx$ $[\operatorname{arcsen} x + c]$
- 64) $\int \frac{3}{\sqrt{1-9x^2}} dx$ $[\operatorname{arcsen} 3x + c]$
- 65) $\int \frac{1}{\sqrt{1-4x^2}} dx$ $[\frac{1}{2} \operatorname{arcsen} 2x + c]$
- 66) $\int \frac{1}{\sqrt{4-x^2}} dx$ $[\operatorname{arcsen} \frac{x}{2} + c]$
- 67) $\int \frac{e^x}{\sqrt{1-e^{2x}}} dx$ $[\operatorname{arcsen} e^x + c]$
- 68) $\int \frac{3}{\sqrt{5-2x^2}} dx$ $[\frac{3}{\sqrt{2}} \operatorname{arcsen} \frac{\sqrt{2}}{\sqrt{5}} x + c]$
- 69) $\int \frac{1}{\sqrt{4-25x^2}} dx$ $[\frac{1}{5} \operatorname{arcsen}\left(\frac{5}{2}x\right) + c]$
- 70) $\int \frac{1}{x\sqrt{1-\ln^2 x}} dx$ $[\operatorname{arcsen}(\ln x) + c]$
- 71) $\int \frac{1}{1+x^2} dx$ $[\operatorname{arctg} x + c]$
- 72) $\int \frac{x}{1+x^4} dx$ $[\frac{1}{2} \operatorname{arctg} x^2 + c]$

- 73) $\int \frac{x}{1+9x^4} dx$ $[\frac{1}{6} \operatorname{arctg}(3x^2)+c]$
- 74) $\int \frac{1}{1+9x^2} dx$ $[\frac{1}{3} \operatorname{arctg}(3x)+c]$
- 75) $\int \frac{x^2}{1+x^2} dx$ $[x - \operatorname{arctg}x + c]$
- 76) $\int \frac{x^2+1}{4x^2+1} dx$ $[\frac{1}{4}x + \frac{3}{8} \operatorname{arctg}(2x)+c]$
- 77) $\int \frac{1}{4+x^2} dx$ $[\frac{1}{2} \operatorname{arctg}(\frac{x}{2})+c]$
- 78) $\int \frac{x^2+1}{4+x^2} dx$ $[x - \frac{3}{2} \operatorname{arctg}(\frac{x}{2})+c]$
- 79) $\int \frac{2x^2-1}{x^2+1} dx$ $[2x - \frac{3}{2} \operatorname{arctg}x + c]$
- 80) $\int \frac{1}{x^2+9} dx$ $[\frac{1}{3} \operatorname{arctg}(\frac{x}{3})+c]$
- 81) $\int 6^x dx$ $[6^x \log_6 e + c]$
- 82) $\int e^{\cos x} \cdot \operatorname{sen}x dx$ $[-e^{\cos x} + c]$
- 83) $\int 2x \cdot e^{x^2+1} dx$ $[e^{x^2+1} + c]$
- 84) $\int 3x \cdot e^{x^2} dx$ $[\frac{3}{2} e^{x^2} + c]$
- 85) $\int e^{3x-2} dx$ $[\frac{1}{3} e^{3x-2} + c]$
- 86) $\int \frac{e^{\operatorname{tg}x}}{\cos^2 x} dx$ $[e^{\operatorname{tg}x} + c]$
- 87) $\int \frac{1}{\operatorname{sen}2x} dx$ $[\frac{1}{2} \ln|\operatorname{tg}x| + c]$
- 88) $\int e^{x^3-1} \cdot x^2 dx$ $[\frac{1}{3} e^{x^3-1} + c]$
- 89) $\int e^{-x} dx$ $[-e^{-x} + c]$
- 90) $\int x \cdot e^{1-2x^2} dx$ $[-\frac{1}{4} e^{1-2x^2} + c]$
- 91) $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$ $[2e^{\sqrt{x}} + c]$
- 92) $\int e^{-2x} dx$ $[-\frac{1}{2} e^{-2x} + c]$
- 93) $\int \frac{1}{\ln(2x-1)} \cdot \frac{1}{2x-1} dx$ $[\frac{1}{2} \ln|\ln(2x-1)| + c]$
- 94) $\int \frac{x+1}{x} dx$ $[x + \ln|x| + c]$
- 95) $\int \operatorname{sen}^3 x dx$ $[\frac{1}{3} \cos^3 x - \cos x + c]$

Calcola i seguenti integrali indefiniti di funzioni razionali fratte.

- 96) $\int \frac{1}{2x-1} dx$ $[\frac{1}{2} \ln|2x-1| + c]$
- 97) $\int \frac{3}{x+2} dx$ $[3 \ln|x+2| + c]$

- 98) $\int \frac{2}{3-x} dx$ $[-2\ln|3-x|+c]$
- 99) $\int \frac{1}{5-2x} dx$ $[-2\ln|5-2x|+c]$
- 100) $\int \frac{1}{x^2-1} dx$ $[\frac{1}{2}\ln|x-1|-\frac{1}{2}\ln|x+1|+c]$
- 101) $\int \frac{3}{x^2-5} dx$ $[\frac{3\sqrt{5}}{10}\ln|x-\sqrt{5}|-\frac{3\sqrt{5}}{10}\ln|x+\sqrt{5}|+c]$
- 102) $\int \frac{2-x}{4x^2-1} dx$ $[\frac{3}{8}\ln|2x-1|-\frac{5}{8}\ln|2x+1|+c]$
- 103) $\int \frac{4+x}{16-9x^2} dx$ $[-\frac{2}{9}\ln|4-3x|+\frac{1}{9}\ln|4+3x|+c]$
- 104) $\int \frac{2}{x^2-2x-3} dx$ $[\frac{1}{2}\ln|x-3|-\frac{1}{2}\ln|x+1|+c]$
- 105) $\int \frac{2x-1}{x^2-5x+6} dx$ $[-3\ln|x-2|+5\ln|x-3|+c]$
- 106) $\int \frac{x}{x^2+4x+3} dx$ $[\frac{3}{2}\ln|x+3|-\frac{1}{2}\ln|x+1|+c]$
- 107) $\int \frac{x+1}{2x^2-x-1} dx$ $[-\frac{1}{6}\ln|2x+1|+\frac{2}{3}\ln|x-1|+c]$
- 108) $\int \frac{1}{2x^2+x-3} dx$ $[-\frac{2}{5}\ln|2x+3|+\frac{1}{5}\ln|x-1|+c]$
- 109) $\int \frac{5x}{6x^2+x-1} dx$ $[\frac{1}{2}\ln|2x+1|+\frac{1}{3}\ln|3x-1|+c]$
- 110) $\int \frac{1}{x^2-x+1} dx$ $[\frac{2}{\sqrt{3}}\arctg\frac{2x-1}{\sqrt{3}}+c]$
- 111) $\int \frac{2}{2x^2+x+1} dx$ $[\frac{4}{\sqrt{7}}\arctg\frac{4x+1}{\sqrt{7}}+c]$
- 112) $\int \frac{4}{x^2+2x+4} dx$ $[\frac{4}{\sqrt{3}}\arctg\frac{x+1}{\sqrt{3}}+c]$
- 113) $\int \frac{2}{x^2+4} dx$ $[\arctg\frac{x}{2}+c]$
- 114) $\int \frac{x}{x^2-2x+6} dx$ $[\frac{1}{2}\ln(x^2-2x+6)+\frac{1}{\sqrt{5}}\arctg\frac{x-1}{\sqrt{5}}+c]$
- 115) $\int \frac{4x}{2x^2-x+5} dx$ $[\ln(2x^2-x+5)+\frac{2}{\sqrt{39}}\arctg\frac{4x-1}{\sqrt{39}}+c]$
- 116) $\int \frac{3x+1}{9x^2+1} dx$ $[\frac{1}{6}\ln(9x^2+1)+\frac{1}{3}\arctg 3x+c]$
- 117) $\int \frac{x+2}{x^2+x+3} dx$ $[\frac{1}{2}\ln(x^2+x+3)+\frac{3}{\sqrt{11}}\arctg\frac{2x+1}{\sqrt{11}}+c]$
- 118) $\int \frac{3x^2-2x}{3x^2-2x+1} dx$ $[x-\frac{1}{\sqrt{2}}\arctg\frac{3x-1}{\sqrt{2}}+c]$
- 119) $\int \frac{2x^2-8x}{x^2-4x+6} dx$ $[2x-\frac{12}{\sqrt{2}}\arctg\frac{x-2}{\sqrt{2}}+c]$
- 120) $\int \frac{1}{9x^2-6x+1} dx$ $[\frac{-1}{3(3x-1)}+c]$
- 121) $\int \frac{7}{49x^2+14x+1} dx$ $[\frac{-1}{7x+1}+c]$
- 122) $\int \frac{x}{x^2-2x+1} dx$ $[\ln|x-1|-\frac{1}{x-1}+c]$

$$\begin{array}{ll}
123) \int \frac{8x}{4x^2+4x+1} dx & [2\ln|2x+1| + \frac{4}{2x+1} + c] \\
124) \int \frac{2x-4}{x^2-6x+9} dx & [2\ln|x-3| - \frac{2}{x-3} + c] \\
125) \int \frac{25x-15}{25x^2+30x+9} dx & [\ln|5x+3| + \frac{6}{5x+3} + c] \\
126) \int \frac{2x+1}{x^2+4x+4} dx & [2\ln|x+2| + \frac{3}{x+2} + c] \\
127) \int \frac{3x^2-4x}{9x^2-12x+4} dx & [\frac{4}{27x-18} + \frac{1}{3}x - \frac{2}{9} + c] \\
128) \int \frac{x^2+2x}{x^2+2x+1} dx & [x + \frac{1}{x+1} + c] \\
129) \int \frac{4x}{4x^2-28x+49} dx & [\ln|7-2x| + \frac{7}{7-2x} + c] \\
130) \int \frac{4x+2}{x^3+x^2-4x-4} dx & [\frac{1}{6}(5\ln|x-2| + 4\ln|x+1| - 9\ln|x+2|) + c] \\
131) \int \frac{1}{x^3-3x^2+4} dx & [\frac{1}{9}(-\frac{3}{x-2} + \ln|x+1| - \ln|x-2|) + c] \\
132) \int \frac{x+1}{x^3-3x+2} dx & [\frac{1}{9}(-\frac{6}{x-1} + \ln|x-1| - \ln|x+2|) + c] \\
133) \int \frac{x^2-2x-1}{x^3-3x^2-6x+8} dx & [\frac{1}{18}(4\ln|x-1| + 7\ln|4-x| + 7\ln|x+2|) + c] \\
134) \int \frac{x^2+1}{x^3-7x-6} dx & [\frac{1}{2}(\ln|x-3| - \ln|x+1| + 2\ln|x+2|) + c] \\
135) \int \frac{3}{x^3-8x^2+21x-18} dx & [3(-\frac{1}{x-3} - \ln|x-3| + \ln|x-2|) + c] \\
136) \int \frac{2x}{2x^3-3x+1} dx & [\frac{1}{3}(2\ln|x-1| - \ln|2x^2+2x-1|) + c] \\
137) \int \frac{2x^2-5}{2x^3-5x^2-1x+6} dx & [\frac{1}{5}(-\ln|x+1| + 5\ln|x-2| + \ln|2x-3|) + c] \\
138) \int \frac{x+11}{3x^3-10x^2-9x+4} dx & [\frac{1}{22}(6\ln|x-4| + 11\ln|x+1| - 17\ln|3x-1|) + c] \\
139) \int \frac{x+2}{x^3-x^2+x-1} dx & [-\frac{3}{4}\ln|x^2+1| + \frac{3}{2}\ln|x-1| - \frac{1}{2}\arctg x + c] \\
140) \int \frac{1}{x^3+x^2+x+1} dx & [-\frac{1}{4}\ln|x^2+1| + \frac{1}{2}\ln|x+1| + \frac{1}{2}\arctg x + c] \\
141) \int \frac{x}{x^3-1} dx & [-\frac{1}{6}\ln|x^2+x+1| + \frac{1}{3}\ln|x-1| + \frac{1}{\sqrt{3}}\arctg \frac{2x+1}{\sqrt{3}} + c] \\
142) \int \frac{x^2}{x^3-1} dx & [\frac{1}{3}\ln|x^3-1| + c] \\
143) \int \frac{x^2+x}{x^3+x^2+x+6} dx & [\frac{7}{18}\ln|x^2-x+3| + \frac{2}{9}\ln|x+2| + \frac{1}{9\sqrt{11}}\arctg \frac{2x-1}{\sqrt{11}} + c] \\
144) \int \frac{x^2+x-2}{4x^3-4x^2+x-1} dx & [\frac{1}{8}\ln|4x^2+1| + \arctg(2x) + c] \\
145) \int \frac{x^2}{8x^3-4x^2-2x+1} dx & [\frac{1}{8}(\frac{2}{1-2x} + \ln|-2x-1| - \ln|1-2x|) + c] \\
146) \int \frac{2x^2+4x+1}{x-1} dx & [x^2+6x-7+7\ln|x-1| + c]
\end{array}$$

$$\begin{array}{ll}
147) \int \frac{x^2+3x}{x-2} dx & \left[\frac{x^2}{2} + 5x - 24 + 10 \ln|x-2| + c \right] \\
148) \int \frac{2x^2-x-1}{x+1} dx & \left[x^2 - 3x - 4 + 2 \ln|x+1| + c \right] \\
149) \int \frac{2x^2-4}{x+1} dx & \left[x^2 - 2x - 3 - 2 \ln|x+1| + c \right] \\
150) \int \frac{x^3+x^2-2x+4}{x-1} dx & \left[\frac{x^3}{3} + x^2 - \frac{4}{3} + 4 \ln|x-1| + c \right] \\
151) \int \frac{2x^3-2x-1}{2x+2} dx & \left[\frac{x^3}{3} - \frac{x^2}{2} - \frac{7}{6} - \frac{1}{2} \ln|2x+2| + c \right] \\
152) \int \frac{-x^3-x^2+x-1}{x+1} dx & \left[-\frac{x^3}{3} + x + \frac{2}{3} - 2 \ln|x+1| + c \right] \\
153) \int \frac{x^3-3x^2+2x-1}{x^2+1} dx & \left[\frac{x^2}{2} - 3x + \frac{1}{2} \ln|x^2+1| + 2 \operatorname{arctg} x + c \right] \\
154) \int \frac{2x^3-x^2-1}{x^2+4} dx & \left[x^2 - x - 4 \ln|x^2+4| + \frac{3}{2} \operatorname{arctg} \frac{1}{2} + c \right] \\
155) \int \frac{x^3-x^2-2x+3}{x^2+x+1} dx & \left[\frac{x^2}{2} - 2x - \frac{1}{2} \ln|x^2+x+1| + \frac{1}{\sqrt{3}} \operatorname{arctg} \frac{2x+1}{\sqrt{3}} + c \right]
\end{array}$$

Calcola i seguenti integrali indefiniti utilizzando la regola di integrazione per parti.

$$\begin{array}{ll}
156) \int x \cdot \cos x \, dx & \left[x \operatorname{sen} x + \cos x + c \right] \\
157) \int x^2 \cdot \operatorname{sen} x \, dx & \left[-x^2 \cos x + 2x \operatorname{sen} x + 2 \cos x + c \right] \\
158) \int \ln(x+1) \, dx & \left[(x+1) \ln(x+1) - x + c \right] \\
159) \int x e^{-x} \, dx & \left[-e^{-x} (x+1) + c \right] \\
160) \int x^2 e^x \, dx & \left[e^x \left(x^2 - 2x + 2 \right) + c \right] \\
161) \int 2x \ln(x-3) \, dx & \left[\left(x^2 - 9 \right) \ln(x-3) - \frac{x^2}{2} + 3x + c \right] \\
162) \int x \ln x \, dx & \left[\frac{x^2}{2} \ln x - \frac{x^2}{4} + c \right] \\
163) \int x \ln^2 x \, dx & \left[\frac{x^2}{2} \ln^2 x - \frac{x^2}{2} \ln x + \frac{x^2}{4} + c \right] \\
164) \int x \ln^2(5x) \, dx & \left[\frac{x^2}{2} \ln^2(5x) - \frac{x^2}{2} \ln(5x) + \frac{x^2}{4} + c \right] \\
165) \int (x+1) \operatorname{sen} x \, dx & \left[-x \cos x + \operatorname{sen} x - \cos x + c \right] \\
166) \int (x+1)^2 \cos x \, dx & \left[(x+1)^2 \operatorname{sen} x + 2(x+1) \cos x - 2 \operatorname{sen} x + c \right] \\
167) \int \operatorname{sen} x e^x \, dx & \left[\frac{1}{2} e^x (\operatorname{sen} x - \cos x) + c \right] \\
168) \int \sqrt{1-x^2} \, dx & \left[\frac{1}{2} x \sqrt{1-x^2} + \frac{1}{2} \operatorname{arcsen} x + c \right] \\
169) \int \frac{\ln x}{x^2} \, dx & \left[-\frac{\ln x + 1}{x} + c \right] \\
170) \int x \operatorname{tg}^2 x \, dx & \left[-\frac{x^2}{2} + x \operatorname{tg} x + \ln(\cos x) + c \right]
\end{array}$$

$$171) \int 2x \cdot \arctg x \, dx \quad [x^2 \cdot \arctg x - x + \arctg x + c]$$

$$172) \int e^{2x} \cos x \, dx \quad [\frac{1}{5} e^{2x} (\sin x + 2 \cos x) + c]$$

$$173) \int \cos^2 x \, dx \quad [\frac{1}{2} (x + \sin x \cos x) + c]$$

Calcola i seguenti integrali indefiniti utilizzando il metodo di integrazione per sostituzione.

$$174) \int e^{2x-3} \, dx \quad (t=2x-3) \quad [\frac{1}{2} e^{2x-3} + c]$$

$$175) \int \frac{e^x}{e^x - 1} \, dx \quad (t=e^x) \quad [\ln |1 - e^x| + c]$$

$$176) \int \frac{e^x - 1}{e^x + 1} \, dx \quad (t=e^x) \quad [2 \ln(-2 - 2e^x) - x + c]$$

$$177) \int \sqrt{4x-3} \, dx \quad (t=4x-3) \quad [\frac{1}{6} (4x-3) \sqrt{4x-3} + c]$$

$$178) \int \sqrt{2-x} \, dx \quad (t=2-x) \quad [-\frac{2}{3} (2-x) \sqrt{2-x} + c]$$

$$179) \int \sqrt[3]{4x-3} \, dx \quad (t=4x-3) \quad [\frac{3}{16} (4x-3) \sqrt[3]{4x-3} + c]$$

$$180) \int \frac{1}{\sqrt{4x-3}} \, dx \quad (t=4x-3) \quad [\frac{1}{2} \sqrt{4x-3} + c]$$

$$181) \int \frac{1}{\sqrt{x+2}} \, dx \quad (t=x+2) \quad [2\sqrt{x+2} + c]$$

$$182) \int \frac{\ln x}{x} \, dx \quad (t=\ln x) \quad [\frac{1}{2} \ln^2 x + c]$$

$$183) \int \frac{\ln^2 x}{x} \, dx \quad (t=\ln x) \quad [\frac{1}{3} \ln^3 x + c]$$

$$184) \int \frac{1}{x\sqrt{x} + \sqrt{x}} \, dx \quad (t=\sqrt{x}) \quad [2 \arctg \sqrt{x} + c]$$

$$185) \int \frac{1}{\sqrt{x}\sqrt{1-x}} \, dx \quad (t=\sqrt{x}) \quad [2 \arcsen \sqrt{x} + c]$$

$$186) \int \operatorname{tg}^2 x \, dx \quad (t=\operatorname{tg} x) \quad [\operatorname{tg} x - x + c]$$

$$187) \int \frac{\sqrt{x}}{x+2} \, dx \quad (t=\sqrt{x}) \quad [2\sqrt{x} - 2\sqrt{2} \arctg \sqrt{\frac{x}{2}} + c]$$

$$188) \int \frac{1}{(2-x)\sqrt{1-x}} \, dx \quad (t^2=1-x) \quad [-2 \arctg \sqrt{1-x} + c]$$

$$189) \int \sqrt{1-x^2} \, dx \quad (x=\operatorname{sen} t) \quad [\frac{1}{2} x \sqrt{1-x^2} + \frac{1}{2} \arcsen x + c]$$