II

4

4.1.

(1) $A = \dfrac{3}{4}, B = \dfrac{1}{4}$

(2) $A = -1, B = 1, C = -2$

(3) $A = 1, B = -1, C = 1$

(4) $A = 1, B = -4, C = 3$

4.2.

(1) $\dfrac{1}{3} \cdot \dfrac{1}{x-1} - \dfrac{1}{3} \cdot \dfrac{1}{x+2}$

(2) $\left(-\dfrac{2}{x} + \dfrac{3}{x^2}\right) + \dfrac{2}{x+1}$

(3) $\dfrac{1}{x-1} + \dfrac{2}{x^2+2}$

(4) $\dfrac{1}{x+1} - \dfrac{1}{(x+1)^2} + \dfrac{1}{(x+1)^3}$

4.3.

(1) $\dfrac{3}{4}\log|x+2| - \dfrac{1}{4}\log|x-2|$

(2) $\dfrac{1}{3}\log|x-1| - \dfrac{1}{3}\log|x+2|$

(3) $2\log|x-2| - \log|x-1|$

(4) $-\log|x+2| + \log|x-1| + \dfrac{2}{x-1}$

(5) $-2\log|x| - \dfrac{3}{x} + 2\log|x+1|$

(6) $\dfrac{2}{3}\log|x-1| + \dfrac{1}{3}\log|x+2| + \dfrac{3}{x+2}$

(7) $\log|x-1| - \dfrac{1}{2}\log(x^2+1) + \arctan x$

(8) $\log|x-1| + \sqrt{2}\arctan\dfrac{x}{\sqrt{2}}$

(9) $\dfrac{2}{3}\log|x-1| - \dfrac{1}{3}\log(x^2+x+1)$

(10) $\log|x-1| - 4\log|x-2| + 3\log|x-3|$

(11) $\log|x+1| + \dfrac{1}{x+1} - \dfrac{1}{2(x+1)^2}$

4.4. .

(1) $\dfrac{1}{2}x^2 + x + \log|x-1|$

(2) $\dfrac{1}{2}x^2 - x + 3\log|x+1|$

(3) $\dfrac{1}{2}x^2 + \log|x-1| - \log|x+1|$

(4) $x + 3\log|x| + \dfrac{3}{x} - 4\log|x+1|$

II

5

5.1.

(1) $-\dfrac{1}{2}\cos(2x+1)$

(2) $\dfrac{1}{2}x + \dfrac{1}{4}\sin 2x$

(3) $\tan x$

(4) $\log(1+\sin x)$

(5) $-\log|\sin x + \cos x|$

(6) $-\log|\cos x|$

(7) $\dfrac{1}{4}\sin^4 x$

(8) $-e^{\cos x}$

(9) $\arctan(\sin x)$

(10) $\dfrac{1}{3}\cos^3 x - \cos x$

(11) $\dfrac{1}{2}\log\left|\dfrac{\cos x - 1}{\cos x + 1}\right|$

(12) $\dfrac{1}{2}\log\left|\dfrac{\sin x + 1}{\sin x - 1}\right|$

5.2.

(1) $\tan\dfrac{x}{2}$

(2) $-\dfrac{2}{1+\tan\frac{x}{2}}$

(3) $\log\left|\tan\dfrac{x}{2}\right|$

(4) $-\dfrac{1}{\tan\frac{x}{2}}$

(5) $\log\left|\tan\dfrac{x}{2}+1\right|$

(6) $\log\left|\dfrac{\tan\frac{x}{2}-1}{\tan\frac{x}{2}+1}\right|$

6

6.1.

(1) $\dfrac{1}{3}\sqrt{(2x-1)^3}$

(2) $\dfrac{3}{4}\sqrt[3]{(2x-1)^2}$

(3) $-\dfrac{1}{3}\sqrt{(4-x^2)^2}$

(4) $-\sqrt{4-x^2}$

(5) $\arcsin\dfrac{x}{2}$

(6) $\arcsin\dfrac{x-2}{2}$

6.2.

(1) $\dfrac{2}{5}\sqrt{(x-1)^5}+\dfrac{2}{3}\sqrt{(x-1)^3}$

(2) $2\log(\sqrt{x-1}+1)$

(3) $2\sqrt{x-1}-2\log(\sqrt{x-1}+1)$

(4) $\dfrac{1}{3}\sqrt{(x-1)^3}+\sqrt{x-1}$

(5) $2\arctan\sqrt{x-1}$

(6) $\sqrt{2}\arctan\sqrt{\dfrac{x-1}{2}}$