Příklad 1.

(a)
$$\int \frac{4}{2x+3} - \frac{1}{x+1}\,\mathrm{d}x \stackrel{c}{=} 2\log|2x+3| - \log|x+1|\,.$$

(b)
$$\int -\frac{1}{x} + \frac{1}{x+1} + \frac{1}{(x+1)^2} + \frac{2}{(x+1)^3}\,\mathrm{d}x \stackrel{c}{=} \log\left|\frac{x+1}{x}\right| - \frac{1}{x+1} - \frac{1}{(x+1)^2}\,.$$

(c)
$$\int -\frac{2}{x-1} + \sum_{k=0}^{14} x^k\,\mathrm{d}x \stackrel{c}{=} -2\log|x-1| + \sum_{k=0}^{14} \frac{1}{k+1}x^{k+1}\,.$$

(d)
$$\int 1 + \frac{1}{3}\cdot\frac{1}{x^2+1} - \frac{16}{3}\cdot\frac{1}{x^2+4}\,\mathrm{d}x \stackrel{c}{=} x + \frac{1}{3}\arctan x - \frac{8}{3}\arctan\frac{x}{2}\,.$$

(e)
$$\int 1 + \frac{1}{8}\cdot\frac{1}{x-1} - \frac{1}{8}\cdot\frac{1}{x+1} - \frac{9}{4}\cdot\frac{1}{x^2+3}\,\mathrm{d}x \stackrel{c}{=} x + \frac{1}{8}\log\left|\frac{x-1}{x+1}\right| - \frac{3\sqrt{3}}{4}\arctan\frac{x}{\sqrt{3}}\,.$$

(f)
$$\int \frac{1}{(x-2)^2} - \frac{1}{x^2-4x+5}\,\mathrm{d}x \stackrel{c}{=} -\frac{1}{x-2} - \arctan(x-2)\,.$$

(g)
$$\int \frac{1}{x^2+2x+2} - \frac{2x+2}{(x^2+2x+2)^2}\,\mathrm{d}x \stackrel{c}{=} \arctan(x+1) + \frac{1}{x^2+2x+2}\,.$$

(h)
$$\frac{1}{3}\int \frac{x+1}{x^2-x+1} - \frac{1}{x+1}\,\mathrm{d}x \stackrel{c}{=} -\frac{1}{3}\log|x+1| + \frac{1}{6}\log(x^2-x+1) + \frac{\sqrt{3}}{3}\arctan\frac{2x-1}{\sqrt{3}}\,.$$

(i)
$$\int x^2 + x - 1 + \frac{2-3x}{x^2-x+2}\,\mathrm{d}x \stackrel{c}{=} \frac{1}{3}x^3 + \frac{1}{2}x^2 - x - \frac{3}{2}\log(x^2-x+2) + \frac{1}{\sqrt{7}}\arctan\frac{2x-1}{\sqrt{7}}\,.$$

(j)
$$\frac{1}{2}\int \frac{x+1}{x^2+x+1} - \frac{x-1}{x^2-x+1}\,\mathrm{d}x \stackrel{c}{=} \frac{1}{4}\log\frac{x^2+x+1}{x^2-x+1} + \frac{1}{2\sqrt{3}}\left(\arctan\frac{2x+1}{\sqrt{3}} + \arctan\frac{2x-1}{\sqrt{3}}\right)\,.$$

(k)
$$\int -\frac{44}{9}\cdot\frac{1}{2x+1} + \frac{11}{9}\cdot\frac{2x+1}{x^2+x+1} + \frac{1}{3}\cdot\frac{7x+5}{(x^2+x+1)^2}\,\mathrm{d}x$$
$$\stackrel{c}{=} -\frac{22}{9}\log|2x+1| + \frac{11}{9}\log(x^2+x+1) + \frac{1}{3}\cdot\frac{x-3}{x^2+x+1} + \frac{2\sqrt{3}}{9}\arctan\frac{2x+1}{\sqrt{3}}\,.$$

(1)

$$\frac{1}{4}\int \frac{x+1}{x^2+x+1} + \frac{-x+1}{x^2-x+1} + \frac{x+1}{(x^2+x+1)^2} + \frac{-x+1}{(x^2-x+1)^2}\,\mathrm{d}x$$

$$\overset{\mathrm{c}}{=} \frac{1}{8}\log\frac{x^2+x+1}{x^2-x+1} - \frac{1}{6}\cdot\frac{2x^2+1}{x^4+x^2+1} + \frac{5}{12\sqrt{3}}\left(\arctan\frac{2x+1}{\sqrt{3}} + \arctan\frac{2x-1}{\sqrt{3}}\right).$$