12. $\int \frac{2x-1}{x^2+4x+5}\,dx$ $\quad u = x^2+4x+5$ $\quad du = (2x+4)\,dx$

$= \int \frac{2x+4-5}{x^2+4x+5}\,dx$

$= \int \frac{2x+4}{x^2+4x+5}\,dx - \int \frac{5}{x^2+4x+5}\,dx$

$u = x^2+4x+5$

$du = (2x+4)\,dx$

$(4.5)^2$

$\frac{(2)^2}{4}$

$= \int \frac{1}{u}\,du - \int \frac{5}{x^2+4x+4-4+5}\,dx$

$= \ln|u| - 5\int \frac{1}{(x+2)^2+1}\,dx$

$= \ln|x^2+4x+5| - 5\int \frac{1}{(1)^2+(x+2)^2}\,dx$

$a=1 \quad u=x+2 \quad du=dx$

$= \ln|x^2+4x+5| - 5\int \frac{1}{a^2+u^2}\,du$

$= \ln|x^2+4x+5| - 5\cdot\frac{1}{a}\arctan\frac{u}{a} + C$

$= \ln|x^2+4x+5| - 5\cdot\frac{1}{1}\arctan\frac{x+2}{1} + C$

$= \boxed{\ln|x^2+4x+5| - 5\arctan(x+2) + C}$