Partialbruchzerlegung 8.4

3) $\frac{x+4}{(x+1)^2}$ ① $= \frac{x+4}{(x+1)(x+1)} = \frac{A}{(x+1)} + \frac{B}{(x+1)^2}$

② $x+4 = A(x+1) + B$

x^1: $1 = A$

x^0: $4 = A + B \Rightarrow B = 3$

$$\int \frac{x+4}{(x+1)^2}\,dx = \int \frac{1}{x+1}\,dx + 3\int \frac{1}{(x+1)^2}\,dx$$

$$= \ln(x+1) - 3(x+1)^{-1} + C$$

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5) $\frac{z+1}{z^2(z-1)} = \frac{A}{z} + \frac{B}{z^2} + \frac{C}{z-1}$

$$z+1 = Az(z-1) + B(z-1) + Cz^2$$

z^2: $0 = A + C$ $\boxed{C = 2}$

z^1: $1 = -A + B$ $\boxed{A = -2}$ $\Rightarrow A = -1-1$

z^0: $1 = -B$ $\boxed{B = -1}$