$$\int \frac{8-3x}{(x+1)(x^2-4x-5)}\,dx = \int \frac{8-3x}{(x+1)(x+1)(x-5)}\,dx$$

use partial fractions $\frac{8-3x}{(x+1)^2(x-5)} = \frac{A}{x+1} + \frac{B}{(x+1)^2} + \frac{C}{x-5}$

$$8-3x = A(x+1)(x-5) + B(x-5) + C(x+1)^2$$

$x=5 \Rightarrow -7 = 36C$

$C = -7/36$

$x=-1 \Rightarrow 11 = -6B \Rightarrow B = -11/6$

$x=0 \Rightarrow 8 = -5A + -5B + C$

$8 = -5A + \frac{55}{6} - \frac{7}{36}$

$A = \frac{-\frac{55}{6} + \frac{7}{36} - 8}{5} = \frac{-35/36}{5} = \frac{7}{36}$

$$\int \frac{8-3x}{(x+1)(x^2-4x-5)}\,dx = \frac{7/36}{5}\int \frac{dx}{x+1} - \frac{11}{6}\int \frac{dx}{(x+1)^2} - \frac{7}{36}\int \frac{dx}{x-5}$$

$$= \frac{7/36}{5}\ln|x+1| + \frac{11}{6}\frac{1}{x+1} - \frac{7}{36}\ln|x-5| + C$$