

$$\begin{array}{r|l}
 x^2 + 2x - 2 & x-1 \\
 \hline
 x^2 - x & x+3 \\
 \hline
 3x - 2 & \\
 3x - 3 & \\
 \hline
 1 &
 \end{array}$$

$$\Rightarrow x^2 + 2x - 2 = (x-1)(x+3) + 1$$

$$\Rightarrow \frac{x^2 + 2x - 2}{x-1} = \frac{(x-1)(x+3) + 1}{x-1}$$

$$= \frac{\cancel{x-1}(x+3)}{\cancel{x-1}} + \frac{1}{x-1}$$

$$= x+3 + \frac{1}{x-1}$$

$$\Rightarrow \int \frac{x^2 + 2x - 2}{x-1} dx = \frac{1}{2}x^2 + 3x + \ln|x-1| + C$$