Multiply & Divide Rational Expressions

Perform the indicated operations, and reduce to lowest terms.

1. $\dfrac{x\ -\ 2}{x^2\ +\ x\ -\ 2} \cdot \dfrac{x^2\ -\ 3x\ +\ 2}{x\ +\ 2}$

2. $\dfrac{\left(\dfrac{x-2}{x^2+x-2}\right)}{\left(\dfrac{x^2-3x+2}{x+2}\right)}$

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

2. $\dfrac{\left(\frac{x-2}{x^2+x-2}\right)}{\left(\frac{x^2-3x+2}{x+2}\right)}$

$$\frac{\left(\frac{x-2}{x^2+x-2}\right)}{\left(\frac{x^2-3x+2}{x+2}\right)}$$
$$= \frac{x-2}{x^2+x-2} \div \frac{x^2-3x+2}{x+2}$$
$$= \frac{x-2}{x^2+x-2} \cdot \frac{x+2}{x^2-3x+2}$$
$$= \frac{x-2}{(x-1)(x+2)} \cdot \frac{x+2}{(x-2)(x-1)}$$
$$= \frac{1}{(x-1)^2}$$