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$$\frac{x+2}{x^2+3x+2} =$$

We can simplify a fraction if $P(x)$ and $D(x)$ have a common factor

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$$\frac{x+2}{x^2+3x+2} =$$

We can simplify a fraction if $P(x)$ and $D(x)$ have a common factor

To see if $P(x)$ and $D(x)$ have common factors, we need to write them in ▸ factored form $\quad P(x) = a \cdot (x - r_1) \cdot (x - r_2) \cdots (x - r_k)$

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

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The top is already in factored form.

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▸ Factoring the bottom, we get:

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

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Now we can make the simplification $\frac{(x+2)}{(x+2)} = 1$

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Leaving us with:

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Leaving us with:

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Note: $\frac{(x+2)}{(x+2)} = 1$ for $(x+2) \neq 0$, so this equality is true for $x \neq -2$