

Factoring Continued

Review

① Factor $r^2 - 6r + 9$

$$= (r-3)(r-3)$$

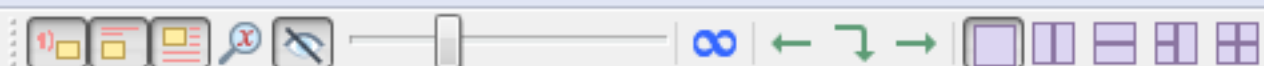
$\begin{array}{r} \times 9 \\ + -6 \\ \hline 3, 3 \end{array}$

② Greatest Common Factor

Factor $= 4(x^2 + 13x + 36)$

(GCF) $= 4(x+4)(x+9)$

$\begin{array}{r} \times 36 \\ + 13 \\ \hline 1, 36 \\ 2, 18 \\ 3, 12 \\ 4, 9 \end{array}$



Factor each completely.

When you see a polynomial where both numbers have a square root it is called DIFFERENCE OF SQUARES

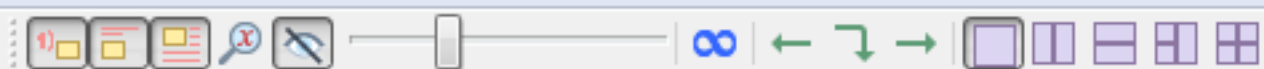
2) $25m^2 - 4$

$$\sqrt{25m^2} - \sqrt{4}$$

$$\sqrt{25} = 5$$

$$\sqrt{4} = 2$$

$$= (5m - 2)(5m + 2)$$



Factor each completely.

First - Look for GCF. What do you do if there isn't one?!

3) $16n^2 + 40n + 25$ You have to use DECOMPOSITION

$$\begin{aligned}
 & 16n^2 + 40n + 25 \quad \begin{matrix} \text{X} \\ + \end{matrix} \quad \begin{matrix} 400 \\ 40 \end{matrix} \\
 & = \frac{(16n^2 + 20n)}{4n} \frac{(20n + 25)}{5} \quad \begin{matrix} 4, 10 \\ 2, 200 \end{matrix} \\
 & = \frac{4n}{4n} (4n + 5) \frac{+5}{+5} (4n + 5) \quad \begin{matrix} 16, 25 \\ 20, 20 \end{matrix} \\
 & = (4n + 5)(4n + 5)
 \end{aligned}$$



Factor each completely.

This is a Difference of Squares

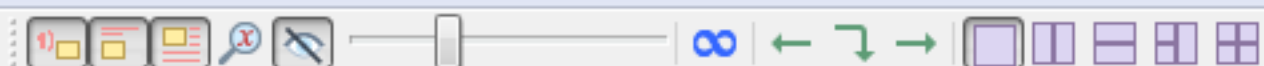
4) $9x^2 - 1$

$$\sqrt{9} = 3$$
$$\sqrt{1} = 1$$

$$9x^2 - 1$$
$$= (3x - 1)(3x + 1)$$

$$3x \cdot 3x = 9x^2$$

$$-1 \cdot +1 = -1$$



Factor each completely.

This would be

Decomposition

5) $9b^2 - 12b + 4$

$$\underbrace{9b^2}_{\text{first term}} - 12b + \underbrace{4}_{\text{last term}}$$

$\times \quad 36$
 $+ \quad -12$

**always pull this out*

$$= \left(\frac{9b^2}{3b} - \frac{6b}{3b} \right) \left(\frac{-6b}{-2} + \frac{4}{-2} \right)$$

$-1, 36$
 $-2, +8$
 $-3, +12$
 $-4, -9$

$$= 3b(3b-2) - 2(3b-2)$$

$$= (3b-2)(3b-2)$$

