

Proficiency Check – Section 1.2 – Factoring Complex Quadratics

Factor the following completely

<p>1. $5x^2 + 27x - 18$</p> <p>AC Method</p> <p>$x^2 + 27x - 90$</p> <p>$(x + \frac{30}{5})(x - \frac{3}{5})$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $(x+6)(5x-3)$ </div> <p style="text-align: right;"> $\begin{matrix} & 90 & \\ & \wedge & \\ 9 & & 10 \\ 3 & \wedge & 30 \end{matrix}$ </p>	<p>2. $14x^2 + 13xy - 12y^2$</p> <p>Grouping</p> <p>$m \cdot n = -168$ $m+n = 13$</p> <p>$(14x^2 + 21x) - (8xy - 12y^2)$</p> <p>$7x(2x+3y) - 4y(2x+3y)$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $(7x-4y)(2x+3y)$ </div> <p style="text-align: right;"> $\begin{matrix} & 168 & \\ & \wedge & \\ 2 & & 84 \\ & \wedge & \\ 2 & & 42 \\ & \wedge & \\ 6 & & 7 \\ 3 & \wedge & 21 \end{matrix}$ </p>
<p>3. $28x^2 + 65x - 33$</p> <p>AC</p> <p>$x^2 + 65x - 924$</p> <p>$(x + \frac{77}{28})(x - \frac{12}{28})$</p> <p>$(x + \frac{11}{4})(x - \frac{3}{7})$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $(4x+11)(7x-3)$ </div> <p style="text-align: right;"> $\begin{matrix} & 924 & \\ & \wedge & \\ 33 & & 28 \\ & \wedge & \\ 3 & & 11 & & 4 & & 7 \\ 12 & & & & & & 77 \end{matrix}$ </p>	<p>4. $6x^2(a^2 - 4) - 29xy(a^2 - 4) + 28y^2(a^2 - 4)$</p> <p>Factor out $(a^2 - 4)$</p> <p>$(a^2 - 4)(6x^2 - 29xy + 28y^2)$</p> <p>Grouping</p> <p>$(a^2 - 4)((6x^2 - 21xy) - (8xy + 28y^2))$ $m \cdot n = 168$ $m+n = -29$</p> <p>$(a^2 - 4)[3x(2x-7y) - 4y(2x-7y)]$ 168</p> <p>$(a^2 - 4)(3x-4y)(2x-7y)$</p> <p>↓ DMS</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $(a+2)(a-2)(3x-4y)(2x-7y)$ </div> <p style="text-align: right;"> $\begin{matrix} & 168 & \\ & \wedge & \\ 6 & & 28 \\ & \wedge & \\ 2 & & 14 \\ & \wedge & \\ 3 & & 4 & & 7 \\ 8 & & & & 12 \end{matrix}$ </p>