

Section 8-8 Factoring by Grouping

Students factor higher-degree polynomials by grouping.

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Some polynomials of a degree greater than 2 can be factored.

We will be using a method called factoring by grouping to do these.

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Factor:

$$8t^3 + 14t^2 + 20t + 35$$

$$\begin{aligned} &(8t^3 + 20t) + (14t^2 + 35) \\ &4t(2t^2 + 5) + 7(2t^2 + 5) \\ &(2t^2 + 5)(4t + 7) \end{aligned}$$

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$$\begin{aligned} \#20. & (18h^3 + 45h^2 - 8h - 20) \\ & 9h^2(2h + 5) - 4(2h + 5) \\ & (2h + 5)(9h^2 - 4) \\ & (2h + 5)(3h + 2)(3h - 2) \end{aligned}$$

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Factor completely:
 $6h^4 + 9h^3 + 12h^2 + 18h$

$$\begin{aligned} &3h(2h^3 + 3h^2 + 4h + 6) \\ &3h(h^2(2h + 3) + 2(2h + 3)) \\ &3h(2h + 3)(h^2 + 2) \end{aligned}$$

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Factor Completely

$$\#. 33. 8m^3 + 32m^2 + 40m + 160$$

$$\begin{aligned} &8((m^3 + 4m^2) + (5m + 20)) \\ &8(m^2(m + 4) + 5(m + 4)) \\ &8(m + 4)(m^2 + 5) \end{aligned}$$

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Summary of Factoring:

1. Factor out the GCF
2. If the polynomial has 2 or 3 terms, look for the a difference of 2 squares, a perfect square trinomial, or a pair of binomial factors.
3. If it has 4 or more terms, group and factor to find the common binomial factors.
4. As a final check, make sure there are no common factors other than 1.

You can always check your work by multiplying your factored form.

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#14, 20, 22 - 26 evens,
30 - 36 evens, 42**

Quiz tomorrow

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