

2021 Factoring Odd Degree Polynomial with Special Factoring Formulas

Lesson 087 | Algebra II | Factoring odd powers

<https://www.youtube.com/watch?v=vLZmUA1Puc0>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Factor $x^{15} - 205891132094649$ using the difference-of-powers formula.

02

Factor $x^{13} - 1220703125$ using the difference-of-powers formula.

03

Factor $x^5 - 7776$ using the difference-of-powers formula.

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04

Factor $x^7 - 2187$ using the difference-of-powers formula.

05

Factor $x^{15} - 32768$ using the difference-of-powers formula.

06

Factor $x^{13} - 2541865828329$ using the difference-of-powers formula.

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01

Factor $x^{15} - 205891132094649$ using the difference-of-powers formula.

For $m=15$, $x^m - 9^m = (x-9)\sum_{k=0}^{m-1} x^{m-1-k} 9^k$. Multiply the factors: all intermediate terms cancel.

02

Factor $x^{13} - 1220703125$ using the difference-of-powers formula.

For $m=13$, $x^m - 5^m = (x-5)\sum_{k=0}^{m-1} x^{m-1-k} 5^k$. Multiply the factors: all intermediate terms cancel.

03

Factor $x^5 - 7776$ using the difference-of-powers formula.

For $m=5$, $x^m - 6^m = (x-6)\sum_{k=0}^{m-1} x^{m-1-k} 6^k$. Multiply the factors: all intermediate terms cancel.

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04

Factor $x^7 - 2187$ using the difference-of-powers formula.

For $m=7$, $x^m - 3^m = (x-3)\sum_{k=0}^{m-1} x^{m-1-k} 3^k$. Multiply the factors: all intermediate terms cancel.

05

Factor $x^{15} - 32768$ using the difference-of-powers formula.

For $m=15$, $x^m - 2^m = (x-2)\sum_{k=0}^{m-1} x^{m-1-k} 2^k$. Multiply the factors: all intermediate terms cancel.

06

Factor $x^{13} - 2541865828329$ using the difference-of-powers formula.

For $m=13$, $x^m - 9^m = (x-9)\sum_{k=0}^{m-1} x^{m-1-k} 9^k$. Multiply the factors: all intermediate terms cancel.