Sec 3.7 Factoring a sum or difference of cubes

Recall: Factoring difference of squares

$$\left(a^2 - b^2\right) = (a-b)(a+b)$$

There was no rule for the sum of squares because it is not factorable.

ie.

$y = 4x^2 + 9$ -this is a parabola vertically stretched by 4 andmoved up 9

- so it has no x-int $\therefore$ no zeros

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However, with a cubic there must always be at least one zero, so it always has at least one factor.

New rules for cubics:

Difference of cubes
A^3-B^3

Sum of cubes
A^3+B^3

Ex: $27x^3 - 1$

$64x^3 + 125$

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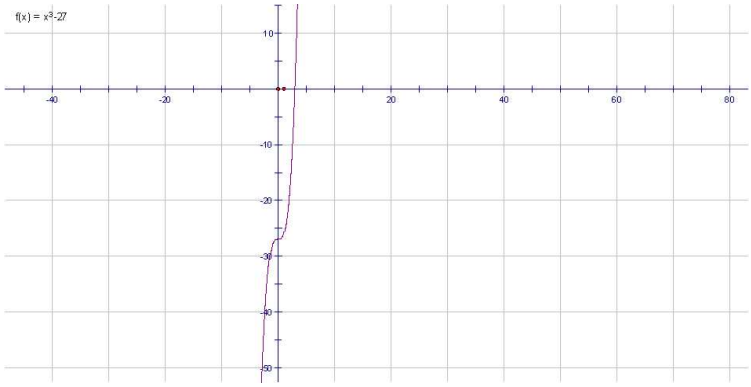
Factor $y=x^3-27$



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Factor $y=8x^3+1$

sum of cubes.gsp

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Rules

$$A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$

$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

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Ex: Factor

a) $216x^3-125$

b) $27x^3+216$

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p182 #2-5 ace...

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Attachments

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