

Thurs. 9/27/18

Sum and Difference of Cubes

$$x^3 + 27 = (x + 3)(x^2 - 3x + 9) = \boxed{(x+3)(x^2-3x+9)}$$

*cube roots (x) (3)*      *(x)<sup>2</sup> (3x) (3)<sup>2</sup>*      *sum*      *pro*      *add*

$$x^3 - 27 = (x - 3)(x^2 + 3x + 9) = \boxed{(x-3)(x^2+3x+9)}$$

*cube roots (x) (3)*      *minus*      *opposites*      *add*

ex)  $8x^3 - 125 = (2x - 5)(4x^2 + 10x + 25) = \boxed{(2x-5)(4x^2+10x+25)}$

*(2x) (5)*      *sum*      *(2x)<sup>2</sup> (2x)(5) (5)<sup>2</sup>*      *op*      *add*      *lws*

Board Problems

①  $3x^3 - 9x^2$   
 $3x^2(x-3)$

②  $4x^3 - 12x^2 + 6x$   
 $2x(2x^2 - 6x + 3)$

③  $18a^2b^3 + 27a^2b^2$   
 $9a^2b^2(2b+3)$

④  $3x(x+2) - 5(x+2)$   
 $(x+2)(3x-5)$

⑤  $2a(b-5) + 7(b-5)$   
 $(b-5)(2a+7)$

⑥  $(8x^3 - 12x^2) + (10x - 15)$   
 $4x^2(2x-3) + 5(2x-3)$   
 $(2x-3)(4x^2+5)$

⑦  $3x^3 + 7x^2 + 15x + 35$   
 $(3x^3 + 7x^2) + (15x + 35)$   
 $x^2(3x+7) + 5(3x+7)$   
 $(3x+7)(x^2+5)$

⑧  $x^4 - 81$   
 $(x^2+9)(x^2-9)$   
 $(x^2+9)(x+3)(x-3)$

⑨  $36y^4 - 49z^2$   
 $(6y^2+7z)(6y^2-7z)$

⑩  $3x^3 - 48x$   
 $3x(x^2-16)$   
 $(3x)(x+4)(x-4)$

⑪  $12x^2 - 27$   
 $3(4x^2-9)$   
 $(3)(2x+3)(2x-3)$