

Sum of Perfect Cubes:

$$(a^3 + b^3) = (a+b)(a^2 - ab + b^2)$$

Difference of Perfect Cubes:

$$(a^3 - b^3) = (a-b)(a^2 + ab + b^2)$$

Factor each completely.

1) $125x^3 + 27$

$$(5x+3)(25x^2 - 15x + 9)$$

3) $8x^3 - 27$

$$(2x-3)(4x^2 + 6x + 9)$$

5) $27 - 8x^3$

$$(3-2x)(9 + 6x + 4x^2)$$

7) $250u^3 - 128$

GCF: 2

$$2(125u^3 - 64)$$

$$2(5u-4)(25u^2 + 20u + 16)$$

9) $-3x^3 - 24$

GCF: -3

$$-3(x^3 + 8) = -3(x+2)(x^2 - 2x + 4)$$

11) $16u^3 - 2$

GCF: 2

$$2(8u^3 - 1)$$

$$2(2u-1)(4u^2 + 2u + 1)$$

13) $250x^3 - 16y^3$

GCF: 2

$$2(125x^3 - 8y^3)$$

$$2(5x-2y)(25x^2 + 10xy + 4y^2)$$

15) $2x^3 + 22x^2 + 56x$

GCF: 2x

$$2x(x^2 + 11x + 28)$$

17) $-3x^3 - 3x^2 + 162x$

$$-3x(x^2 + x - 54)$$

2) $27m^3 + 125$

$$(3m+5)(9m^2 - 15m + 25)$$

4) $64 - x^3$

$$(4-x)(16 + 4x + x^2)$$

6) $x^3 - 8$

$$(x-2)(x^2 + 2x + 4)$$

8) $-54a^3 - 250$

GCF: -2

$$-2(27a^3 + 125)$$

$$-2(3a+5)(9a^2 - 15a + 25)$$

10) $192m^3 - 81$

GCF: 3

$$3(64m^3 - 27)$$

$$3(4m-3)(16m^2 + 12m + 9)$$

12) $432x^3 + 2$

GCF: 2

$$2(216x^3 + 1)$$

$$2(6x+1)(36x^2 - 6x + 1)$$

14) $500a^3 - 108b^3$

GCF: 4

$$4(125a^3 - 27b^3)$$

$$4(5a-3b)(25a^2 + 15ab + 9b^2)$$

16) $3x^3 - 30x^2 + 63x$

$$3x(x^2 - 10x + 31)$$

18) $18x^3 - 12x^2 + 2x$

$$2x(9x^2 - 6x + 1)$$

<h2>Perfect Square Number</h2> <p>Definition:</p> <ul style="list-style-type: none"> The product of a number and itself Evenly divided into two equal pieces (rational) 	<p>Examples:</p> <table> <tbody> <tr> <td>4</td> <td>36</td> </tr> <tr> <td>9</td> <td>49</td> </tr> <tr> <td>16</td> <td>64</td> </tr> <tr> <td>25</td> <td>81</td> </tr> <tr> <td></td> <td>100</td> </tr> </tbody> </table>	4	36	9	49	16	64	25	81		100
4	36										
9	49										
16	64										
25	81										
	100										
<h2>Perfect Cube Number</h2> <p>Definition:</p> <p>The product of a ^{rational} number and itself 3 times. $x \cdot x \cdot x$</p>	<p>Examples:</p> <table> <tbody> <tr> <td>x^3</td> <td>64</td> </tr> <tr> <td>8</td> <td>125</td> </tr> <tr> <td>27</td> <td></td> </tr> </tbody> </table>	x^3	64	8	125	27					
x^3	64										
8	125										
27											
<h2>Factoring</h2> <p>Definition: Breaking a polynomial (or number) into pieces that are multiplied together.</p>	<p>Examples:</p> <p>* 24 is $6 \cdot 4$ or $2 \cdot 12$</p> <p>* $x^2 + 4x + 3$ is $(x+3)(x+1)$.</p>										
<h2>Solving</h2> <p>Definition: Finding which values make the equation true.</p>	<p>Examples</p> <p>$2x = 16$ Solve for x $x = 8$</p> <p>$(x+3)(x+1) = 0$ $x = -3$ $x = -1$</p>										

Notes:

SO
ma
AP
-3
D
+ve