

**Live Worksheet 5 Factoring the Sum or Difference of Cubes**

Sum of Two Cubes: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

Difference of Two Cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Factor the sum or difference of two cubes.

1) $x^3 + 1 = (x + 1)(x^2 - x + 1)$

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

3) $z^3 - 64 =$
 $(z - 4)(z^2 + \underline{\hspace{1cm}}z + \underline{\hspace{1cm}})$

4) $m^3 + 27 =$
 $(m + \underline{\hspace{1cm}})(m^2 - 3\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

5) $1 - t^3 =$
 $(1 - \underline{\hspace{1cm}})(1 + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}^2)$

6) $125 + w^3 =$
 $(5 + \underline{\hspace{1cm}})(\underline{\hspace{1cm}} - \underline{\hspace{1cm}}w + \underline{\hspace{1cm}}^2)$

7) $8x^3 + 27 =$
 $(\underline{\hspace{1cm}} + 3)(\underline{\hspace{1cm}}x^2 + \underline{\hspace{1cm}}x + \underline{\hspace{1cm}})$

8) $64 - 27b^3 =$
 $(4 - \underline{\hspace{1cm}})(\underline{\hspace{1cm}} + \underline{\hspace{1cm}}b + \underline{\hspace{1cm}}b^2)$

9) $8m^3 + 27 =$
 $(\underline{\hspace{1cm}} + 3)(\underline{\hspace{1cm}}m^2 + \underline{\hspace{1cm}}m + \underline{\hspace{1cm}})$

10) $125a^3 + 8b^3 =$
 $(\underline{\hspace{1cm}} + 2b)(\underline{\hspace{1cm}}a^2 + \underline{\hspace{1cm}}ab + \underline{\hspace{1cm}}b^2)$

11) $216a^3 - 125b^3 =$
 $(6a - \underline{\hspace{1cm}})(\underline{\hspace{1cm}}a^2 + \underline{\hspace{1cm}}ab + \underline{\hspace{1cm}}b^2)$

12) $64x^3 - 27y^3 =$
 $(4x - \underline{\hspace{1cm}})(\underline{\hspace{1cm}}x^2 + \underline{\hspace{1cm}}xy + \underline{\hspace{1cm}}y^2)$



13) $256x^3 - 500y^3 =$

$4(4x \quad)(\quad x^2 \quad xy \quad y^2)$

14) $2m^3 + 54n^3 =$

$\quad(m + \quad)(m^2 \quad mn \quad n^2)$