

Intermediate Algebra Skill

Factoring the Sum or Difference of Cubes *SOOP*

Factor each completely.

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

2) $a^3 + 64$
 $(a+4)(a^2-4a+16)$

3) $a^3 + 216$
 $(a+6)(a^2-6a+36)$

4) $27 + 8x^3$
 $(2x+3)(4x^2-6x+9)$

5) $a^3 - 216$
 $(a-6)(a^2+6a+36)$

6) $64x^3 - 27$
 $(4x-3)(16x^2+12x+9)$

7) $27m^3 - 125$
 $(3m-5)(9m^2+15m+25)$

8) $x^3 - 64$
 $(x-4)(x^2+4x+16)$

9) $432 + 250m^3$
 $2(216 + 125m^3)$

10) $81x^3 + 192$
 $3(27x^3 + 64) = 3(3x+4)(9x^2-12x+16)$

2) $(6+5m)(36-30m+25m^2)$

11) $500x^3 + 256$

$4(125x^3 + 64) = 4(5x+4)(25x^2-20x+16)$

12) $81x^3 + 24$
 $3(27x^3 + 8) = 3(3x+2)(9x^2-6x+4)$

13) $864 - 4u^3$
 $4(216 - u^3) = 4(6-u)(36+6u+u^2)$

14) $54x^3 - 2$
 $2(27x^3 - 1) = 2(3x-1)(9x^2+3x+1)$

15) $108 - 4x^3$
 $4(27 - x^3) = 4(3-x)(9+3x+x^2)$

16) $375 - 81a^3$
 $3(125 - 27a^3) = 3(5-3a)(25+15a+9a^2)$

17) $125a^3 + 64b^3 = (5a+4b)(25a^2-20ab+16b^2)$

18) $648x^3 + 3y^3$
 $3(216x^3 + y^3) = 3(6x+y)(36x^2-6xy+y^2)$

19) $216a^3 - 125b^3$
 $(6a-5b)(36a^2+30ab+25b^2)$

20) $125x^3 + 216y^3$
 $(5x+6y)(25x^2-30xy+36y^2)$

21) $32m^3 + 500n^3$

$4(8m^3 + 125n^3) = 4(2m+5n)(4m^2-10mn+25n^2)$

22) $64x^3 - 27y^3$

$(4x-3y)(16x^2+12xy+9y^2)$

23) $256x^3 - 500y^3$

$4(64x^3 - 125y^3) = 4(4x-5y)(16x^2+20xy+25y^2)$

24) $2m^3 + 54n^3$

$2(m^3 + 27n^3) = 2(m+3n)(m^2-3mn+9n^2)$