

Sum/Difference of Cubes ~~Notes~~

Assignment

Factor each completely.

$$1) 125 + 27u^3 = (5)^3 + (3u)^3$$

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

$$2) x^3 + 125 = (x)^3 + (5)^3$$

$$= (x+5)(x^2-5x+25)$$

$$3) 64x^3 - 1 = (4x)^3 - (1)^3$$

$$= (4x-1)(16x^2+4x+1)$$

$$4) 125x^3 - 27 = (5x)^3 - (3)^3$$

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

$$5) 128x^3 + 250 \quad \text{GCF: } 2$$

$$2(64x^3 + 125)$$

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

$$6) 500 + 4x^3 \quad \text{GCF: } 4$$

$$4(125 + x^3)$$

$$= 4(5+x)(25+5x+x^2)$$

$$7) 375 - 3a^3 \quad \text{GCF: } 3$$

$$3(125 - a^3)$$

$$= 3(5-a)(25+5a+a^2)$$

$$8) 250u^3 - 128 \quad \text{GCF: } 2$$

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

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

$$9) u^3 + 27v^3 \quad (u)^3 + (3v)^3$$

$$= (u+3v)(u^2+3uv+9v^2)$$

$$10) 8x^3 + y^3 \quad (2x)^3 + (y)^3$$

$$= (2x+y)(4x^2+2xy+y^2)$$

$$11) 125x^3 - 8y^3 \quad (5x)^3 - (2y)^3$$

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

$$12) x^3 - 216y^3 \quad (x)^3 - (6y)^3$$

$$= (x-6y)(x^2+6xy+36y^2)$$