

Factor Completely:

1.  $8y^3 + 4y$

$4y(2y^2 + 1)$

2.  $3ab - 9ac + 15ad$

$3a(b - 3c + 5d)$

3.  $4x^2 + 4x + 1$

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

4.  $6x^2 - 20x - 16$

$2(3x^2 - 10x - 8) = 2(3x + 2)(x - 4)$

5.  $144xy + 48x^2 + 108y^2$

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

6.  $4a^2 - 64b^2$

$4(a^2 - 16b^2) = 4(a + 4b)(a - 4b)$

7.  $4x^2 - 9y^2$

$(2x + 3y)(2x - 3y)$

$a^2 - b^2$   
 $(a + b)(a - b)$

8.  $(y^2 + 12y + 36) - 9a^2 = [(y + 6) - 3a][(y + 6) + 3a]$

9.  $64a^3 + b^3 = (4a + b)(16a^2 - 4ab + b^2)$

10.  $8x^3 - 216y^3 = 8(x - 3y)(x^2 + 3xy + 9y^2)$

11.  $x^2 + 7x + 12$

$(x + 3)(x + 4)$

12.  $x^2 - 12x + 20$

$(x - 10)(x - 2)$

13.  $2a^2 - 18a + 36$

$2(a^2 - 9a + 18) = 2(a - 6)(a - 3)$

14.  $16x^2 + 32x - 128$

$16(x^2 + 2x - 8) = 16(x + 4)(x - 2)$

15.  $ax^3 - ay^3 - bx^3 + by^3$

$a(x^3 - y^3) - b(x^3 - y^3)$   
 $(a - b)(x^3 - y^3)$   
 $(a - b)(x - y)(x^2 + xy + y^2)$