

Perfect Squares

1
4
9
16
25
36
49
64
81
100
121
144

Perfect Cubes

1
8
27
64
125
216
343
512
729
1000

$$\sqrt[3]{64} = 4$$

Warm Up

Foil

$$(x+6)(x+6)$$

$$x^2 + \underline{6x} + \underline{6x} + 36$$

$$(x+6)(x-6)$$

$$x^2 - 6x + 6x - 36$$

$$x^2 - 36$$

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

$$4x^2 - 6x + 6x - 9$$

$$4x^2 - 9$$

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

$$x^4 - 9x^2 + 9x^2 - 81$$

$$x^4 - 81$$

$$(5x-1)(5x+1)$$

$$25x^2 + 5x - 5x - 1$$

$$25x^2 - 1$$

5-4 Factoring Special Products

Difference of Squares

$$\underline{\underline{a^2 - b^2 = (a - b)(a + b)}}$$

$$\sqrt{x^2} - \sqrt{9}$$

$$a = x$$

$$b = 3$$

$$(x+3)(x-3)$$

$$\sqrt{16x^4} - \sqrt{9x^2}$$

$$a = 4x^2$$

$$b = 3x$$

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

$$(4x^2 - 3x)$$

$$x^2 - 9 + b$$

$$x^2 - 3$$

$$x^2 + y^2$$

done

Prime

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

$$\sqrt{x^2} - \sqrt{49}$$

$$a = x \quad b = 7$$

$$(x + 7)(x - 7)$$

$$9x^2 - 64y^2$$

$$(3x + 8y)(3x - 8y)$$

$$\sqrt[2]{x^8}$$

$$16x^8 - 4y^2$$

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

5-4 Factoring Special Products

Difference of Squares

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

$$\begin{array}{ccc}
 8x^2 - 50 & 15x^2 - 36 & 98x^2 - 32x^4y^2 \\
 2(4x^2 - 25) & 3(5x^2 - 12) & 2(49x^2 - 16x^4y^2) \\
 2(2x + 5)(2x - 5) & & 2(7x - 4x^2y)(7x + 4x^2y)
 \end{array}$$

$$\begin{array}{l}
 \sqrt{x^4} - \sqrt{1} \\
 (x^2 + 1)(x^2 - 1)
 \end{array}$$

$$\begin{array}{l}
 24e^2 - 54f^4 \\
 6(4e^2 - 9f^4) \\
 6(2e + 3f^2)(2e - 3f^2)
 \end{array}$$

5-4 Factoring Special Products

Difference of Squares

$$32a^2 - 50b^2$$

$$2(16a^2 - 25b^2)$$

$$2(4a - 5b)(4a + 5b)$$

$$100b^2 - 169$$

$$(10b + 13)(10b - 13)$$

Algebra 2

Name _____ ID: 1

Difference of Squares

Factor each completely.

1) $4n^2 - 1$

2) $m^2 - 1$

3) $9x^2 - 4$

4) $9n^2 - 1$

5) $9n^2 - 16$

6) $k^2 - 25$

7) $18n^2 - 8$

8) $36n^2 - 100$

9) $36n^2 - 4$

10) $12b^2 - 27$

11) $5n^2 - 125$

12) $27b^2 - 75$

13) $25n^2 - 16$

14) $9p^2 - 4$

15) $x^2 - 4$

16) $25m^2 - 1$

5-4 Factoring Special Products

Sum and Difference of Cube

Sum of two cubes

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

Difference of two cubes

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

Sum of two cubes

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

Factor

$$8x^3 + y^3$$

$$27x^3 + 8y^6$$

Sum of two cubes

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

Factor

$$a^6 + 64b^3$$

$$125a^3 + 27b^9$$

Difference of two cubes

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

Factor

$$8a^3 - 27b^6$$

$$x^3 - 27y^3$$

Difference of two cubes

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

Factor

$$64x^{12} - 8y^3$$

$$216x^6 - y^3$$