Name: _____

Factors

Exercise 1: Factor the expression. Tell which special product factoring pattern you used.

1) $8x^3 - 27y^3$

2) $125x^3 + 27y^3$

3) $y^3x^3 - t^3z^3$

4) $1000x^3 - y^3$

5) $64x^3 - 729z^3$

6) $x^3 + 1000y^3$

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

8) $(3x-4)^3 + (x+5)^3$

9) $(5-x)^3 + (3+2x)^3$

10) $8(x-3)^3 - 27(1-4x)^3$

Exercise 2: Answer each question and relate the different parts together

1) Multiply $(x-3)(x^3+3x^2+9x+27)$
2) Use the result of part (1) to suggest a formula for factoring a difference of two powers. Use multiplication to check your result.
3) Do you think the formula you found in part (2) can be extended to fifth powers? Sixths powers and so on? If so, state the formula for any positive integer n. If not, explain why not.

Exercise 3: Answer each question and relate the different parts together

1) By writing x^4+64 in the form $(x^4+16x^2+64)-16x^2$, write this expression as a difference of two squares.
2) Use the formula for the difference of two squares to factor the expression you wrote in part (1)
3) Use the method of parts (1) and (2) to factor x^4+1024