Factoring Involving More than One Technique.

① Factor: $\frac{1}{16}a^4 - 81b^8 = \ldots$ difference of two terms! Could be a difference of squares, and it is.

$$= \left(\tfrac{1}{4}a^2\right)^2 - \left(9b^4\right)^2 = \left(\tfrac{1}{4}a^2 - 9b^4\right)\left(\tfrac{1}{4}a^2 + 9b^4\right)$$

another difference of squares

sum of squares, of type a^2+b^2, not factorable!

$$= \left(\tfrac{1}{2}a - 3b^2\right)\left(\tfrac{1}{2}a + 3b^2\right)\left(\tfrac{1}{4}a^2 + 9b^4\right)$$

② Factor (fully): $x^2 - y^2 + x + y$

$$= (x-y)(x+y) + (x+y)$$

↑ could insert those here!

$$= (x+y)[(x-y)+1] = (x+y)(x-y+1)$$

③ $9a^4 + 6a^2c + c^2 - 9 = (3a^2+c)^2 - 9 = (3a^2+c)^2 - (3)^2$

has a | has both a and c | has c

$$= (3a^2+c-3)(3a^2+c+3)$$

④ $a^2 - b^2 - c^2 + 2bc = a^2 - (b^2 - 2bc + c^2) = (a)^2 - (b-c)^2$

$$= (a-(b-c))(a+(b-c))$$

$$= (a-b+c)(a+b-c)$$