

Notes 9-7

Factoring Special Cases

Ex. 1: Factor each expression.

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

a) $n^2 + 8n + 16$

$$a^2 = n^2$$
$$a = n$$

$$b^2 = 16$$
$$b = 4$$

$$2ab = 2 \cdot n \cdot 4 = 8n$$

$$(n+4)^2$$

b) $n^2 - 16n + 64$

$$a^2 = n^2$$
$$a = n$$

$$b^2 = 64$$
$$b = 8$$

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

$$2ab = 2 \cdot n \cdot 8 = 16n$$

$$(n-8)^2$$

Ex. 2: Factor $4t^2 + 36t + 81$

$$a^2 = 4t^2$$

$$b^2 = 81$$

$$2ab = 2 \cdot 2t \cdot 9 = 36t$$

$$a = 2t$$

$$b = 9$$

$$(2t+9)^2$$

Ex. 3: Factor $m^2 - 100$

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

$$a^2 = m^2$$

$$b^2 = 100$$

$$a = m$$

$$b = 10$$

$$(m+10)(m-10)$$

Ex. 4: Factor $25x^2 - 64$

$$a^2 = 25x^2$$

$$b^2 = 64$$

$$a = 5x$$

$$b = 8$$

$$(5x+8)(5x-8)$$

Ex. 5: Factor $8y^2 - 50$

Factor out GCF first

$$\rightarrow 2(4y^2 - 25)$$

$$a^2 = 4y^2$$

$$b^2 = 25$$

$$a = 2y$$

$$b = 5$$

Put GCF in answer

$$2(2y+5)(2y-5)$$