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$$18. a) (x-2)^3$$

$$= (x-2)^2 (x-2)$$

$$= \underbrace{(x-2)(x-2)}(x-2)$$

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

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

$$\underline{x^3} - \underline{2x^2} - \underline{4x^2} + \underline{8x} + \underline{4x} - 8$$

$$x^3 - 6x^2 + 12x - 8$$

### 3.8 - Special Polynomials

#### Perfect Square Trinomials.

Expand & look for patterns

$$(x+2)^2 = (x+2)(x+2) = x^2 + 4x + 4$$

$$(x-3)^2 = (x-3)(x-3) = x^2 - 6x + 9$$

$$(2x+5)^2 = (2x+5)(2x+5) = 4x^2 + 20x + 25$$

$$(3x-1)^2 = (3x-1)(3x-1) = 9x^2 - 6x + 1$$

#### Perfect squares

When we see 1<sup>st</sup> & 3<sup>rd</sup> terms are perfect squares:

$$\sqrt{x^2} + 4x + \sqrt{4} = (x+2)^2$$

$$\textcircled{16x^2} - 8x + \textcircled{1}$$

$$\sqrt{16x^2}$$

$$\downarrow$$
$$(4x)$$

$$\sqrt{1}$$

$$\downarrow$$
$$(1)$$

$$(4x - 1)$$

$$-4x$$

$$-4x$$

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$$-8x$$

Factor:

$$x^2 - 12x + 36$$

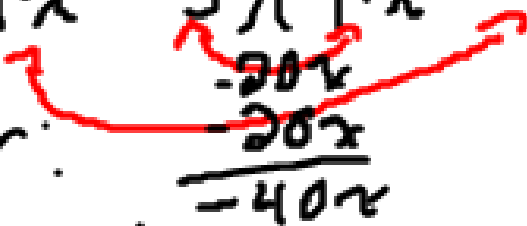
$$(x-6)(x-6) = (x-6)^2$$



Factor:

$$16x^2 - 20x + 25$$

$$(4x-5)(4x-5) \times \text{N.F.}$$



Factor:

$$x^2 - 4xy + 4y^2$$

$$(x-2y)(x-2y) = (x-2y)^2$$

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