

Factor the following:

$$1) \frac{9x^2 - 12xy^2 + 6xy - 8y^3}{3x(3x - 4y^2) + 2y(3x - 4y^2)}$$

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

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

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

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

$$3) x^2 - 49$$

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

$$4) \frac{x^2}{16} - \frac{y^2}{9} = \frac{1}{16}x^2 - \frac{1}{9}y^2$$

$$\left(\frac{1}{4}x + \frac{1}{3}y\right)\left(\frac{1}{4}x - \frac{1}{3}y\right)$$

$$\left(\frac{x}{4} - \frac{y}{3}\right)\left(\frac{x}{4} + \frac{y}{3}\right)$$

Diff. of squares

$$5) x^2 - 11x + 30 \quad 6) 5x^2 - 17x + 6$$

$$(x-6)(x-5)$$

ac: 30
b: -17
m: -15
n: -2

$$5x^2 - 15x - 2x + 6$$

$$5x(x-3) - 2(x-3)$$

$$(5x-2)(x-3)$$

$$7) 2x^3 - 18x$$

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

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

$$8) x^4 - 8x^2 + 16$$

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

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

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

Are the following trinomials factorable?

Check: $\Delta = b^2 - 4ac$

$$a) x^2 - x + 1$$

$$\Delta = (-1)^2 - 4(1)(1)$$

$$= 1 - 4$$

$$= -3$$

$$\Delta < 0 \therefore \text{no sol.}$$

$$b) 2x^2 - x - 6$$

$$\Delta = (-1)^2 - 4(2)(-6)$$

$$= 49$$

$$\Delta > 0 \therefore 2 \text{ sol.}$$