

1.8 Factoring

Recall factoring technics from grade 10:

1. Common factor
2. Common factor by grouping
3. Trinomial x^2+bx+c ← product and sum!
4. Trinomial ax^2+bx+c
5. Perfect Square Trinomial $a^2 + 2ab + b^2 = (a + b)^2$
6. Difference of two squares $a^2 - b^2 = (a + b)(a - b)$

e.g.1: Factor

a) x^3+2x^2-x-2

b) $3x^2+5x-2$

c) x^3-7x^2+10x

Sum and Difference of Cubes:

$$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$$

$$x^3 - y^3 = (x - y)(x^2 + xy - y^2)$$

e.g.2: Factor $x^3 + 8$

e.g.3: Factor $(x - 3)^3 + (2x + 1)^3$

e.g.5: Sketch the given $f(x) = x^3 + 2x^2 - x - 2$

* standard form

step 1: write in factored form

step 2: find zeros, degree, end behaviour

step 3: sketch

