2.2 Day 2

Quadratic Form

$Ax^2 + Bx + C$

How can I get $Ax^6 + Bx^3 + C = 0$ Into a quadratic Form?

or $Ax^8 + Bx^4 + C = 0$ $\quad x^8 = (x^4)^2$

or $Ax^{10} + Bx^5 + C = 0$ $\quad x^{10} = (x^5)^2$

or $Ax^{20} + Bx^{10} + C = 0$ $\quad x^{20} = (x^{10})^2$

* Write $f(x)$ in terms of the "x" of the B term

$A(x^4)^2 + Bx^4 + C = 0$ or $A(x^{10})^2 + Bx^{10} + C = 0$

Substitute a simple variable for the more complicated one.

$x^n = u$

EX: $x^4 - 8x^2 + 15 = 0$ $\quad x^2 = u$

$u^2 - 8u + 15 = 0$ — sub "u" in for x^2

$(u - 5)(u - 3) = 0$ — replace x^2

$(x^2 - 5)(x^2 - 3) = 0$

$x^2 = 5$ $\quad x^2 = 3$

⋮

Zeros:

$f(x) = 0$ at the root "c" (zero)

$f(c) = 0$ $x = c$ is a solution

$(x - c)$ is a factor of $f(x)$

Repeated Zeros and Multiplicity

If $(x-c)$ is a repeated factor of $f(x)$, then c is a repeated zero.

The number of times a zero occurs is the multiplicity of that zero.

Ex $(x-c)^3$, c has multiplicity 3

if odd multiplicity, then graph crosses x-axis

if even multiplicity, then graph tangent to x-axis

104- 25-27, 50-53, 64, 65, 86; 87, 112-113

(use "a")