DAILY LESSON PLAN **COURSE** Alg 2 Honors

TOPIC/SECTION 6.7 Writing Equations for Polynomial functions

STANDARD(S) 10.0 **DATE** 11/25/08

****

for $x^2 - 5x - 6 = 0$

$(x-6)(x+1) = 0$

$x = 6, \; x = -1$

If $r_1, r_2, \ldots$ are zeros of $f(x)$, then $f(x) = (x-r_1)(x-r_2)\ldots$

Ex: Write a polynomial function of least degree, with the given zeros:

① $0, -1, \frac{2}{3}$

$f(x) = (x-0)(x+1)(x-\frac{2}{3})$

$= x(x+1)(3x-2)$

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

$\boxed{f(x) = 3x^3 + x^2 - 2x}$

② $-\sqrt{2}, \; 3i$ ($\sqrt{2}, \; -3i$ are also zeros) } Radical & complex zeros appear in ± conjugate pairs

$f(x) = (x-(-\sqrt{2}))(x-\sqrt{2})(x-3i)(x-(-3i))$

$= (x+\sqrt{2})(x-\sqrt{2})(x-3i)(x+3i)$

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

$f(x) = (x^2-2)(x^2+9)$

$\boxed{f(x) = x^4 + 7x^2 - 18}$

→

****

ASSIGNMENT:

③ $1, -2, 3-i$

($3+i$ is also a zero)

$$f(x) = (x-1)(x+2)(x-(3-i))(x-(3+i))$$

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

$$= (x^2+x-2)(x^2-6x+10)$$

$$= x^4-6x^3+10x^2$$
$$+x^3-6x^2+10x$$
$$-2x^2+12x-20$$

$$f(x) = x^4-5x^3+2x^2+22x-20$$