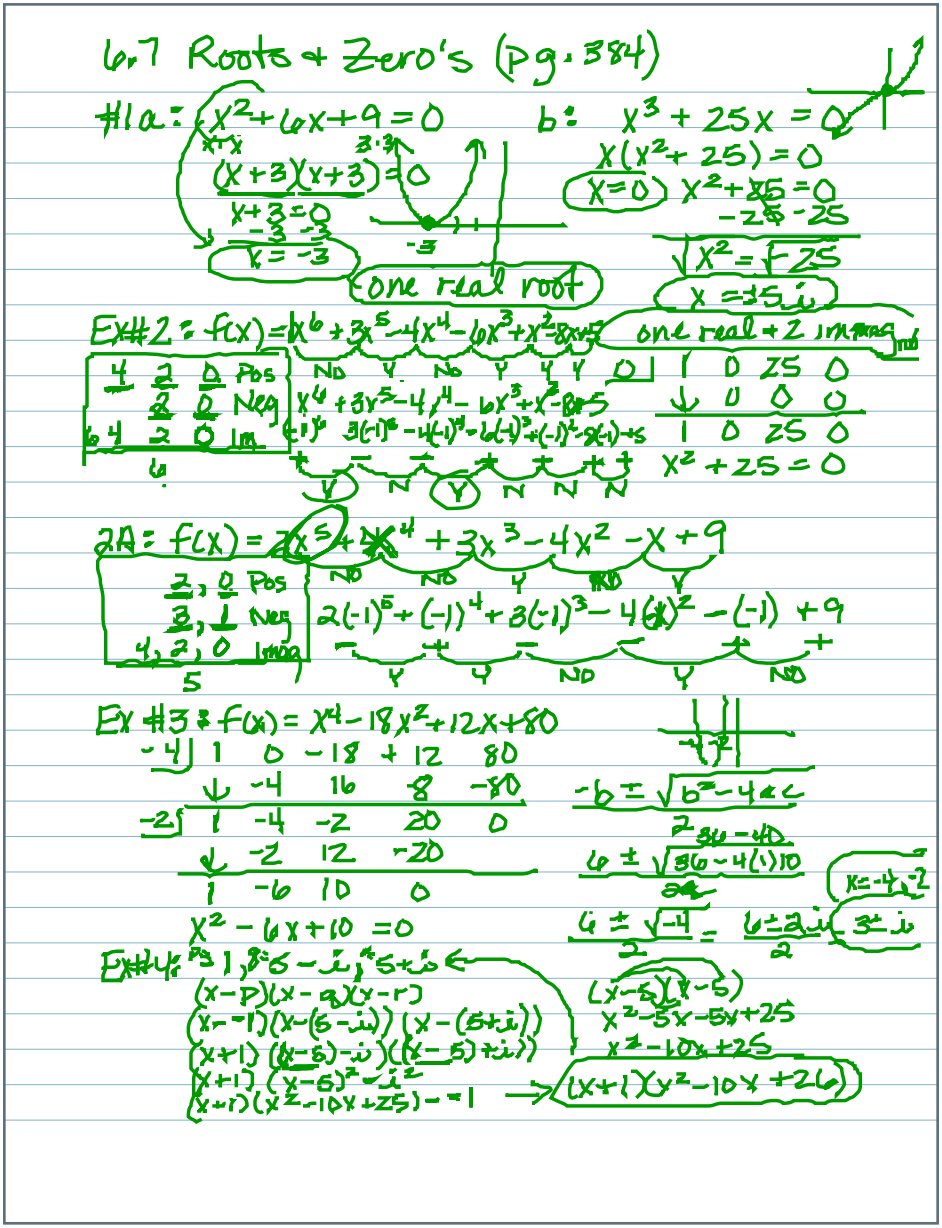


12.08.2011 3:13p 12/8/11, 10:18 AM, 28m 28s

6.7 Roots & Zero's (pg. 384)

#1a: $x^2+6x+9=0$

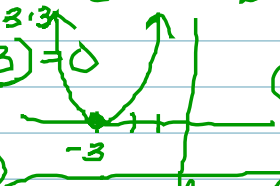
$x \cdot x \quad 3 \cdot 3$

$(x+3)(x+3)=0$

$x+3=0$

$-3 \quad -3$

$x=-3$



one real root

b: $x^3+25x=0$

$x(x^2+25)=0$

$x=0$ $\quad x^2+25=0$

$-25 \quad -25$

$\sqrt{x^2}=\sqrt{-25}$

$x=\pm 5i$

one real + 2 imag roots

Ex#2: $f(x)=x^6+3x^5-4x^4-6x^3+x^2-8x+5$

4	2	0	Pos
2	0		Neg
6	4	2	0 Im

6

NO Y NO Y Y Y

$(-1)^6+3(-1)^5-4(-1)^4-6(-1)^3+(-1)^2-8(-1)+5$

$+ \quad - \quad - \quad + \quad + \quad + \quad +$

Y N Y N N N

1	0	25	0	
↓	0	0	0	
1	0	25	0	

$x^2+25=0$

2A: $f(x)=2x^5+x^4+3x^3-4x^2-x+9$

2, 0	Pos
3, 1	Neg
4, 2, 0	Imag

5

NO NO Y NO Y

$2(-1)^5+(-1)^4+3(-1)^3-4(-1)^2-(-1)+9$

$- \quad + \quad - \quad - \quad + \quad +$

Y Y NO Y NO

Ex#3: $f(x)=x^4-18x^2+12x+80$

-4	1	0	-18	+12	80
	↓	-4	16	8	-80
-2	1	-4	-2	20	0
	↓	-2	12	-20	
	1	-6	10	0	

$x^2-6x+10=0$

$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$\frac{6 \pm \sqrt{36-4(1)10}}{2}$

$\frac{6 \pm \sqrt{-4}}{2} = \frac{6 \pm 2i}{2} = 3 \pm i$

$x=-4, 2$

Ex#4: $p=1, 5-i, 5+i$

$(x-p)(x-q)(x-r)$

$(x-1)(x-(5-i))(x-(5+i))$

$(x+1)((x-5)-i)((x-5)+i))$

$(x+1)(x-5)^2-i^2$

$(x+1)(x^2-10x+25)-1$

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

$x^2-5x-5x+25$

$x^2-10x+25$

$(x+1)(x^2-10x+26)$