Algebra 2 Name: ____________

Poly Recap Date: ________ Period: ______

1.) Given $f(x) = -4x^2 - 6x + 3$ and $g(x) = 2x - 3$, find ...

a.) $f(-3) = -4(-3)^2 - 6(-3) + 3$

$= -4(9) + 18 + 3$

$= -36 + 18 + 3$

$= -18 + 3$

$= -15$

b.) $g(4m) = 2(4m) - 3$

$= 8M - 3$

c.) $f(t-3) = -4(t-3)^2 - 6(t-3) + 3$

$= -4(t^2 - 6t + 9) - 6t + 18 + 3$

$= -4t^2 + 24t - 36 - 6t + 21$

$= -4t^2 + 18t - 15$

d.) $3(g(2t)) = 3(2(2t) - 3)$

$= 3(4t - 3)$

$= 12t - 9$

e.) $f(3t-2) - 2f(3t) = -4(3t-2)^2 - 6(3t-2) + 3 - 2(-4(3t)^2 - 6(3t) + 3)$

$= -4(3t-2)(3t-2) - 18t + 12 + 3 - 2(-4(9t^2) - 18t + 3)$

$= -4(9t^2 - 12t + 4) - 18t + 15 - 2(-36t^2 - 18t + 3)$

$= -36t^2 + 48t - 16 - 18t + 15 + 72t^2 + 36t - 6$

$= 36t^2 + 66t - 7$

Find ALL zeros of the given function.

2.) $f(x) = x^3 + 4x^2 + 14x + 20$

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

Number of Positive Real Zeros	Number of Negative Real Zeros	Number of Imaginary Zeros
0	3	0
0	1	2

Total # of Zeros: 3

$$\begin{array}{r|rrrr} -2 & 1 & 4 & 14 & 20 \\ & \downarrow & -2 & -4 & -20 \\ \hline & 1 & 2 & 10 & 0 \end{array}$$

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

$x = \dfrac{-2 \pm \sqrt{4 - 40}}{2}$

$x = \dfrac{-2 \pm \sqrt{-36}}{2}$

$x = \dfrac{-2 \pm 6i}{2}$

$x = -1 \pm 3i$

$\boxed{3, \ -1 \pm 3i}$

3.) $f(x) = x^4 - 3x^2 - 4$

+ − −

Total # of Zeros: 4

Number of Positive Real Zeros	Number of Negative Real Zeros	Number of Imaginary Zeros
1	1	2

$$\begin{array}{r|rrrrr} -2 & 1 & 0 & -3 & 0 & -4 \\ & \downarrow & -2 & 4 & -2 & 4 \\ \hline & 1 & -2 & 1 & -2 & 0 \end{array}$$

$x^3 - 2x^2 + x - 2 = 0$

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

$(x-2)(x^2+1) = 0$

$x - 2 = 0 \qquad x^2 + 1 = 0$

$x = 2 \qquad x^2 = -1$

$x = \pm i$

$\boxed{-2,\ 2,\ \pm i}$

4.) $p(x) = x^4 - 3x^3 + 3x - 4$

Degree: 4

Even / Odd: EVEN

L.C.: 1 POSITIVE

Zeros: −1.22, 2.80

End Behavior:

$as\ x \to \infty, p(x) \to$ ∞

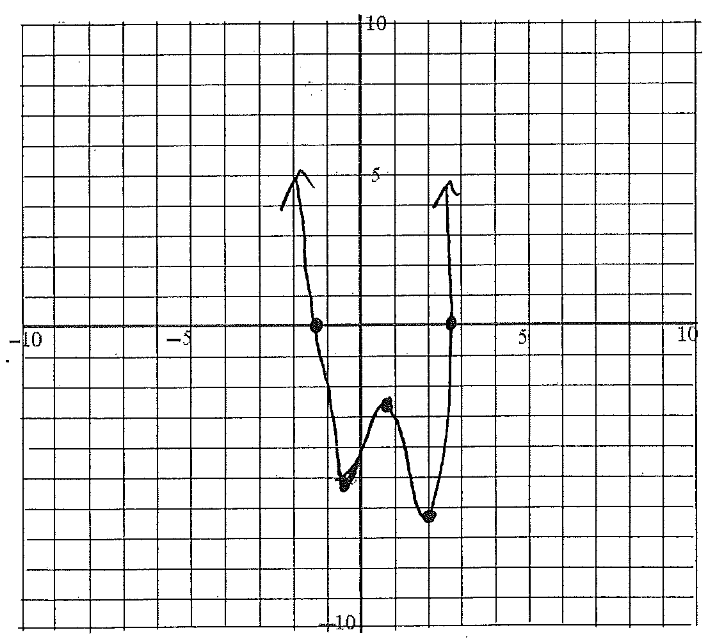
$as\ x \to -\infty, p(x) \to$ ∞

R. Max: (.70, −2.69)

R. Min: (−.52, −5.10) (2.~~07~~, −6.04)

Increasing Intervals: (−.52, .70) (2.07, ∞)

Decreasing Intervals: (−∞, −.52) (.70, 2.07)



x				
p(x)				