Algebra II
Name Key

Unit 3: Polynomial Functions
Date________________

Unit: 3 SHOW ALL WORK!!

Homework: 19 Test Review

1. $f(x) = 6x^5 - 3x^4 + 2x + 7$

leading coefficient: 6 degree: 5

$x \to \infty, f(x) \to$ $+\infty$
$x \to -\infty, f(x) \to$ $-\infty$

maximum turning points: 4

maximum real roots: 5

2. $f(x) = -2x^4 + 6x^3 + 5x$

leading coefficient: -2 degree: 4

$x \to \infty, f(x) \to$ $-\infty$
$x \to -\infty, f(x) \to$ $-\infty$

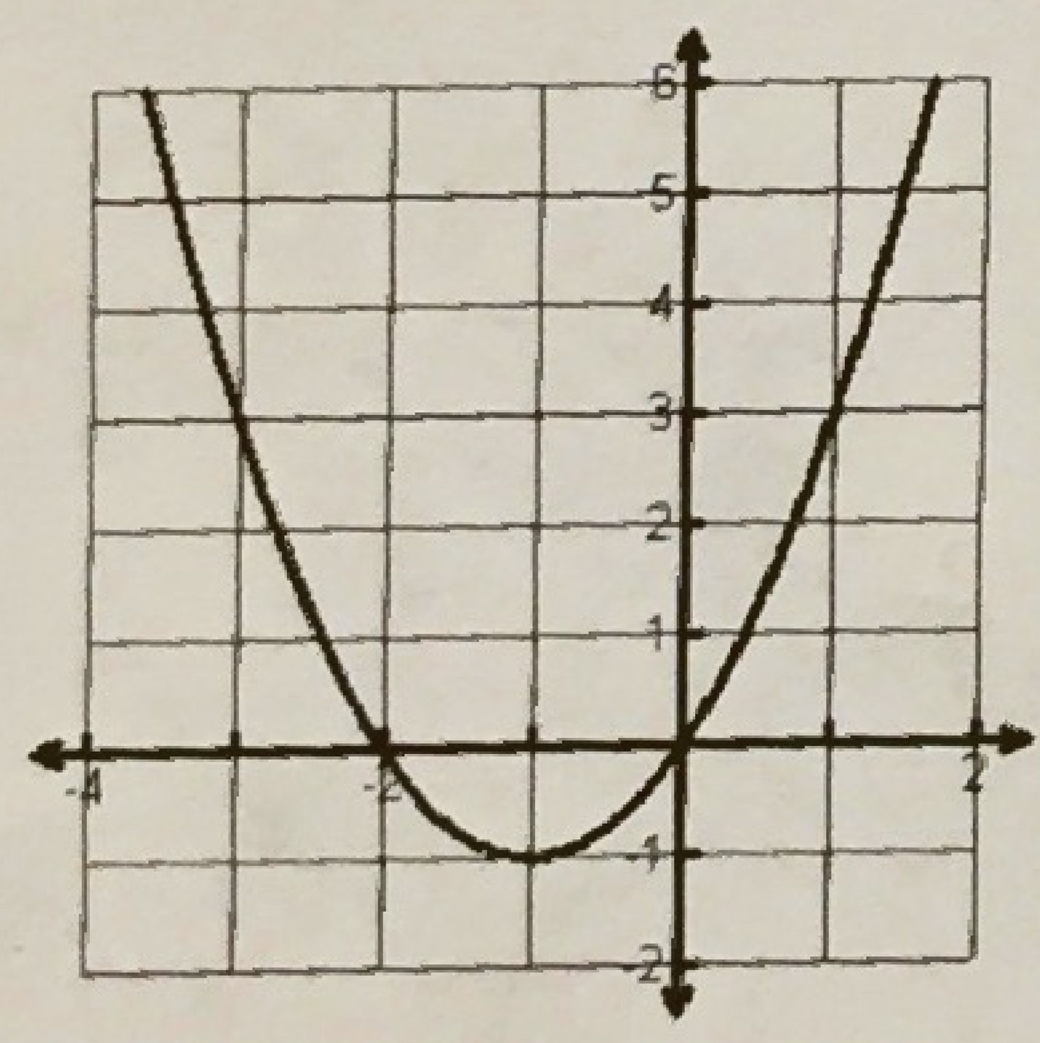
maximum turning points: 3

maximum real roots: 4

absolute or relative maximum(s):________

absolute or relative minimum(s):________

3.



Domain: $(-\infty, +\infty)$ Range: $[-1, +\infty)$

Zeros: -2, 0 Y-int: 0

Rel. Max: None Rel. Min: None

Abs. Max: None Abs. Min: (-1, -1)

Inc: $[-1, +\infty)$ Dec: $(-\infty, -1)$

Even, Odd or Neither FUNCTION: Neither

Least Possible Degree: 2

$x \to \infty, f(x) \to$ $+\infty$
$x \to -\infty, f(x) \to$ $+\infty$

4. Use synthetic substitution to evaluate the given polynomial at the given value. Verify your answer by substituting the value in for x in the polynomial function. $f(x) = x^2 - 16x + 34$ for $x = 5$

5	1	-16	32
	1	5	-55
	5	-11	-23

5. Determine the number and type of roots for each equation using one of the given roots. Then find each root. $x^3 - 7x + 6 = 0$; 1

2

2 positive Roots

$(-x)^3 - 7(-x) + 6$

$-x^3 + 7x + 6$ 1 Neg Root

1

Roots: -3, 1, 2

6. Write the simplest polynomial function with integral coefficients that has the given zeros.

-5, -2, 4

$(x+5)(x+2)(x-4)$

$(x^2+7x+10)(x-4)$

$x^3+3x^2-18x-40$

7. $x^3 + 3x^2 + 3x + 5 = 0$

p = 5 factors = $\pm 1, \pm 5$

q = 1 factors = 1

p/q = $1, -1, 5, -5$

8. $x^3 - x^2 - 34x - 56 = 0$

number of complex roots = 0

number of possible positive real roots = 1

number of possible negative real roots = 2

possible rational roots = $\pm 1, \pm 56, \pm 2, \pm 28, \pm 4, \pm 14, \pm 7, \pm 8$

all rational roots of the equations = $-4, -2, 7$

9. Find the roots of the equations.

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

$1, 2, -1$

10. Use a graphing calculator to assist you in finding the roots of the equations. $x^3 + 2x^2 - 5x - 6 = 0$

$-3, -1, 2$

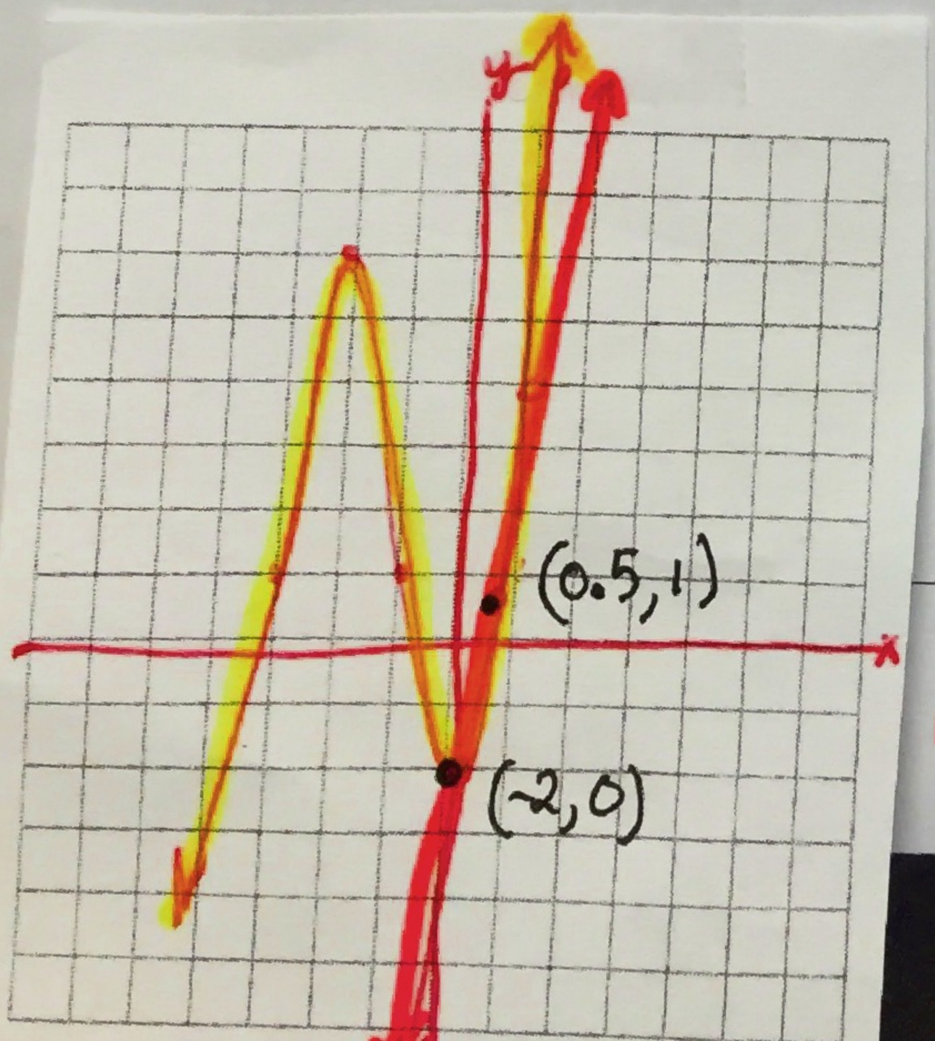
x	y
0	2
1	4

-4	-26
-3	1
-2	6
-1	1
0	-2
1	9

11. Graph the system of equations. Use the graph to estimate the real solution(s), if any solutions exist. Round solutions to the nearest tenth.

$f(x) = 6x - 2$

$g(x) = 2x^3 + 7x^2 + 2x - 2$



12. Solve algebraically. Round solutions to the nearest tenth.

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

$g(x) = -x + 8$

(3, 0)

(-2, 0)