

Name _____

4.2-4.3 Review

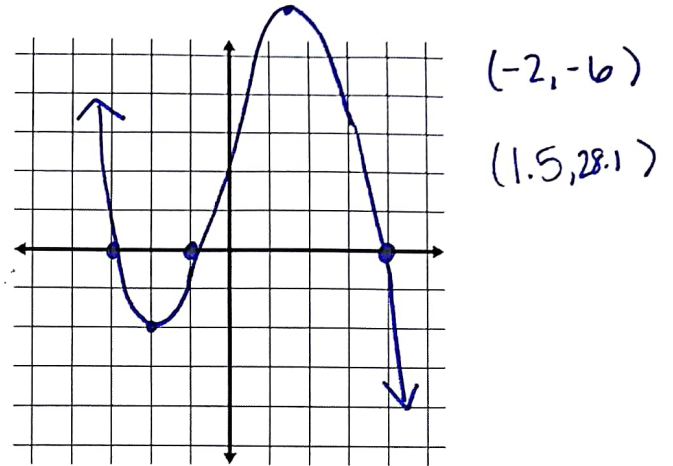
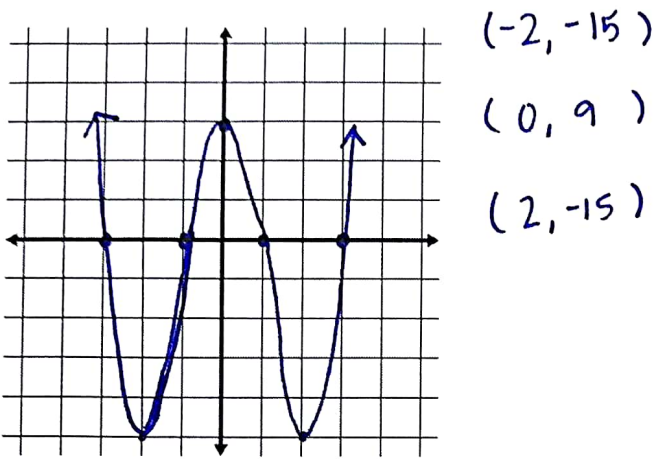
Date _____

Advanced Algebra

GRAPH EACH POLYNOMIAL FUNCTION. List the local max, local min, y-intercept, and end behavior of each.

1) $f(x) = x^4 - 10x^2 + 9$; Roots = $\pm 3, \pm 1$

2) $f(x) = -x^3 + 13x + 12$; Roots = $-1, 4, -3$



Local max: $(0, 9)$

Local Min: $(-2, -15)$

Local Max: $(1.5, 28.1)$

Local Min: $(-2, -6)$

y-intercept: $(0, 9)$

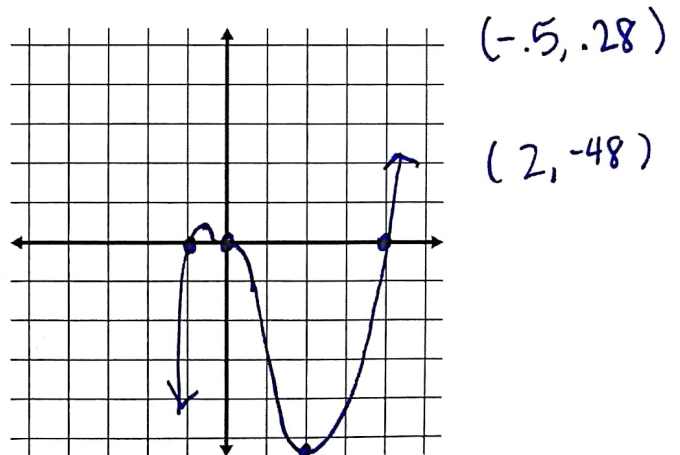
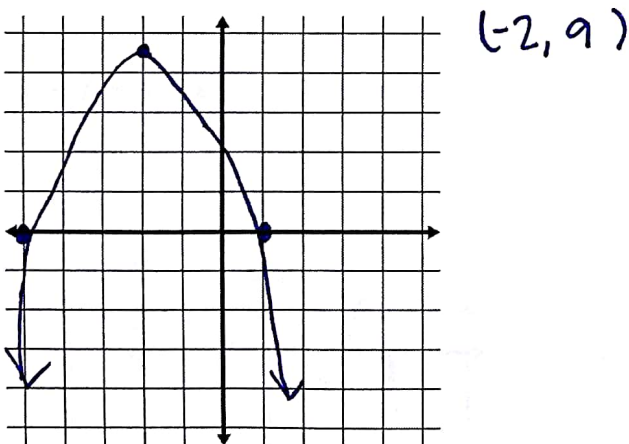
EB: $AS x \rightarrow -\infty, f(x) \rightarrow \infty$
 $AS x \rightarrow \infty, f(x) \rightarrow \infty$

y-intercept: $(0, 12)$

EB: $AS x \rightarrow -\infty, f(x) \rightarrow \infty$
 $AS x \rightarrow \infty, f(x) \rightarrow -\infty$

3) $f(x) = -x^2 - 4x + 5$; Roots = $-5, 1$

4) $f(x) = x^5 - 3x^4 - 4x^3$; Roots = 0 mult. of 3, $-1, 4$



Local max: $(-2, 9)$ Local Min: NONE

Local Max: $(-0.5, 28)$ Local Min: $(2, -48)$

y-intercept: $(0, 5)$ EB: $AS x \rightarrow -\infty, f(x) \rightarrow -\infty$

y-intercept: $(0, 0)$ EB: $AS x \rightarrow -\infty, f(x) \rightarrow -\infty$

$AS x \rightarrow \infty, f(x) \rightarrow -\infty$

$AS x \rightarrow \infty, f(x) \rightarrow \infty$

Write a polynomial function that has the given zeros.

5) $\frac{3}{2}, -5$

$(2x-3)(x+5)$

$2x^2 + 10x - 3x - 15$

$2x^2 + 7x - 15 = 0$

6) $-1, 3, \sqrt{5}$

$(x+1)(x-3)(x-\sqrt{5})$

$x^2 - 3x + 1x - 3$

	x^2	$-2x$	-3
x	x^3	$-2x^2$	$-3x$
-5	$-5x^2$	$10x$	15

$x^3 - 7x^2 + 7x + 15 = 0$

7) 0 mult. of 3, -3 mult. of 2, 5

$x^3(x+3)(x+3)(x-5)$

$x^3(x^2 + 6x + 9)$

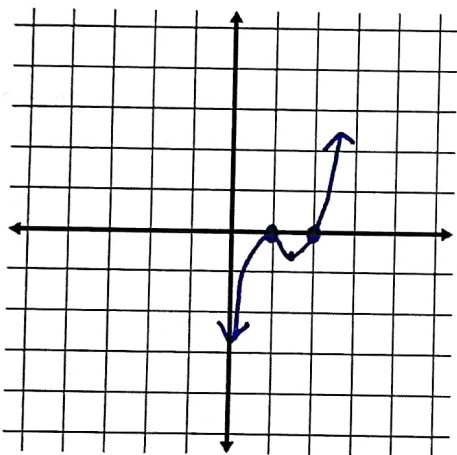
	x^5	$+6x^4$	$+9x^3$
x	x^6	$6x^5$	$9x^4$
-5	$-5x^5$	$-30x^4$	$-45x^3$

$x^6 + x^5 - 21x^4 - 45x^3 = 0$

Find all zeros of the following polynomial functions and graph. List the local max, local min, y-intercept, and end behavior of each.

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

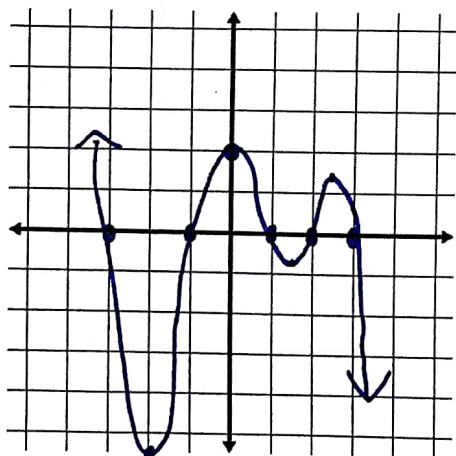
given that 1 (mult. of 2), and 2 are roots



Roots: _____	
Local Max: $(1, 0)$	Local Min: $(1.5, -1.25)$
Y-int: $(0, -2)$	EB: As $x \rightarrow -\infty, f(x) \rightarrow -\infty$ As $x \rightarrow \infty, f(x) \rightarrow \infty$

$(1.5, -1.25)$

9) $f(x) = -x^5 + 2x^4 + 10x^3 - 20x^2 - 9x + 18$ given that 2, $\pm 3, \pm 1$ are roots



Roots: _____	
Local Max: $(0, 18)$ $(2.5, 7.2)$	Local Min: $(-2, -60)$ $(1.5, -4.2)$
Y-int: $(0, 18)$	EB: As $x \rightarrow -\infty, f(x) \rightarrow \infty$ As $x \rightarrow \infty, f(x) \rightarrow -\infty$

$(-2, -60)$

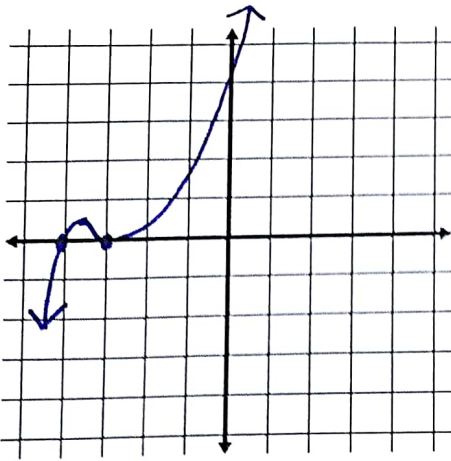
$(0, 18)$

$(1.5, -4.2)$

$(2.5, 7.2)$

11) $f(x) = x^3 + 10x^2 + 33x + 36$

given that -4 & -3 (mult. of 2) are roots

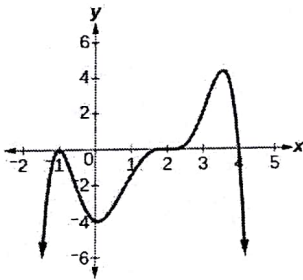


Roots: _____
 Local Max: $(-3.5, 1.25)$ Local Min: $(-3, 0)$
 Y-int: $(0, 36)$ EB: As $x \rightarrow -\infty, f(x) \rightarrow -\infty$.
 As $x \rightarrow \infty, f(x) \rightarrow \infty$

$(-3.5, 1.25)$

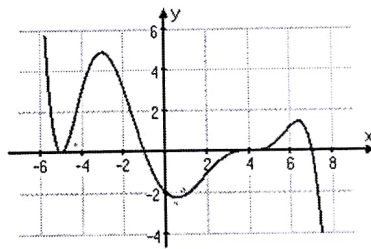
Given the following graphs, determine whether the leading coefficient is positive or negative, and whether the degree is odd or even.

12)



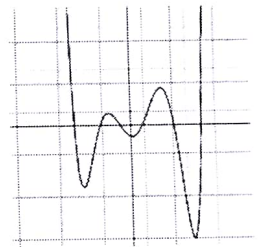
LC: Neg
 Deg: Even

13)



LC: Neg.
 Deg: Odd

14)



LC: Positive
 Deg: Even