Name **Key**   Date _____

4.8 Analyzing Graphs of Polynomial Functions DAY TWO CYU

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Graphing polynomial functions	1 - 4	12-17	
Finding real zeros or x-intercepts	1 – 4	6 – 11	
Finding local/relative max/min	1 – 4	6 – 11	
Increasing/decreasing in interval notation		6 – 9	
Domain/range in interval notation		6 – 9	
Odd/even function	1 - 4		
y-intercept	1 - 4		
Leading Coefficient (LC)	1 – 4		
Degree	1 - 4	10, 11	
Analyzing graphs		5	12 -17

1–4: sketch the function using zeros, degree, y-int, max/mins, odd/even, pos/neg, LC.
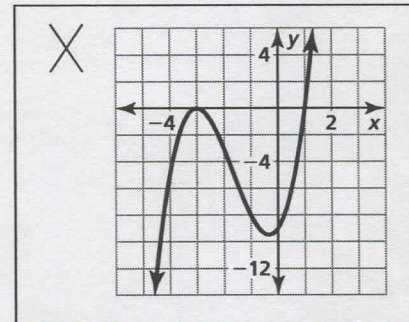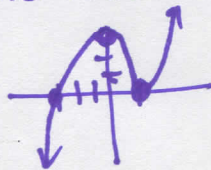
1. $f(x) = (x + 2)^2(x - 3)$ 2. $g(x) = (x - 1)^2(x + 1)(x + 3)$ **paper**

3. $h(x) = 2(x - 1)(x - 2)(x + 2)$ 4. $f(x) = 3(x - 1)^2(x + 1)^2$

5. Describe and correct the error in using factors to graph
$f(x) = (x - 1)^2(x + 3)$.

Double root is x=1 not x=-3.

6 – 9: Sketch the function. Identify the x-intercepts & the points where the local maximums/minimums occur. Determine the intervals for which the function is increasing and decreasing. State the domain and range. LABEL ALL YOUR ANSWERS, ON A SEPARATE PAPER!
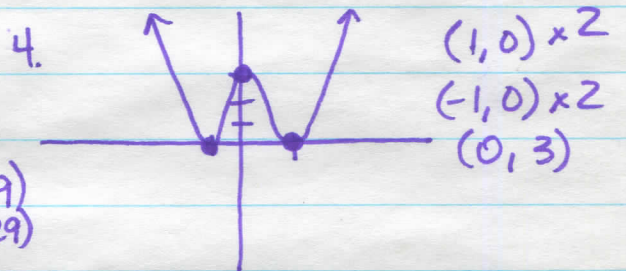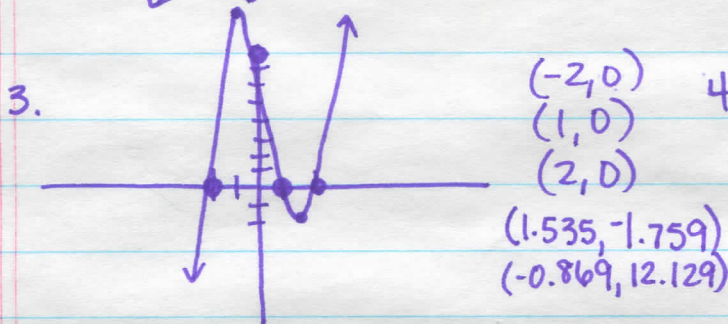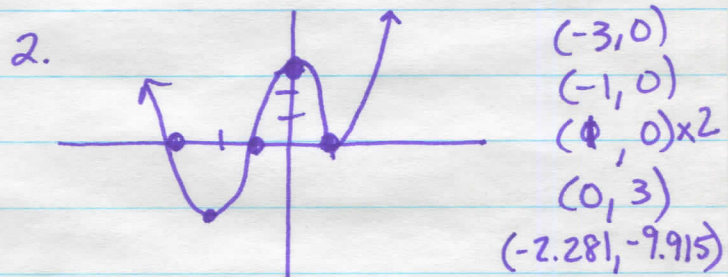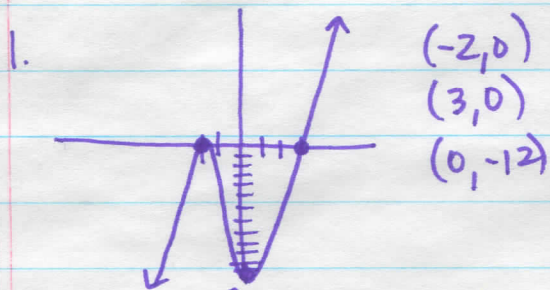
6. $f(x) = 2x^3 - 5x^2 + 3$ 7. $g(x) = -x^4 + 2x$
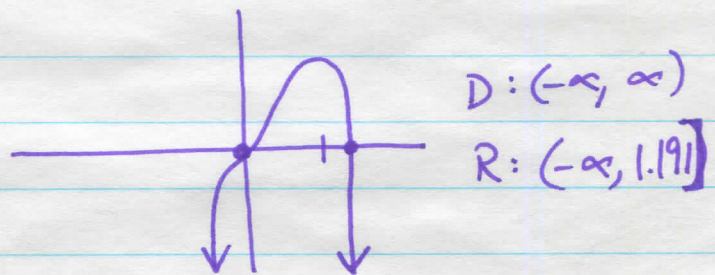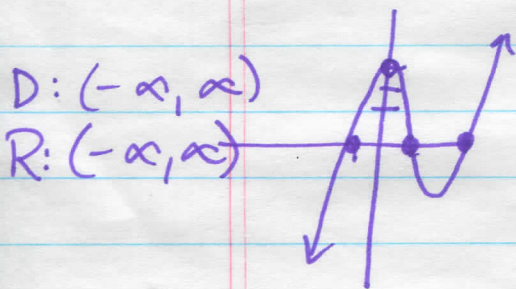
paper

8. $h(x) = x^4 - 2x^2 + 3x$ 9. $f(x) = x^4 - 4x^3 + 5x - 2$

1.
$(-2,0)$
$(3,0)$
$(0,-12)$

2.
$(-3,0)$
$(-1,0)$
$(\phi,0) \times 2$
$(0,3)$
$(-2.281,-9.915)$

3.
$(-2,0)$
$(1,0)$
$(2,0)$
$(1.535,-1.759)$
$(-0.869,12.129)$

4.
$(1,0) \times 2$
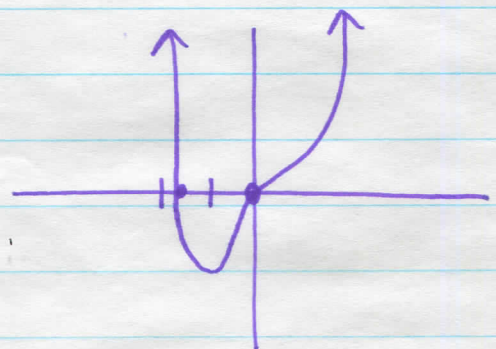$(-1,0) \times 2$
$(0,3)$

6. $(1,0)$
zeros: $\left(\frac{3 \pm \sqrt{33}}{4}, 0\right)$
min: $(1.667, -1.63)$
max: $(0,3)$
Inc: $(-\infty, 0) \cup (1.67, \infty)$
Dec: $(0, 1.67)$

D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

7. $x = 0, \sqrt[3]{2}$
zeros: $(0,0)$ $(\sqrt[3]{2}, 0)$
min: (none)
max: $(0.794, 1.191)$
Inc: $(-\infty, 0.794)$
Dec: $(0.794, \infty)$

D: $(-\infty, \infty)$
R: $(-\infty, 1.191]$

8. zeros: $(0,0), (-1.893, 0)$
min: $(-1.263, -4.435)$
max: none
Inc: $(-1.893, \infty)$
Dec: $(-\infty, -1.893)$
D: $(-\infty, \infty)$
R: $[-4.435, \infty)$

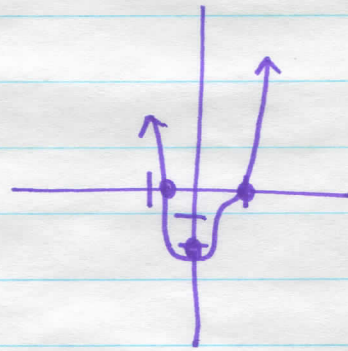9. x-int: $(-0.521, 0)$
   min: $(0, -2)$
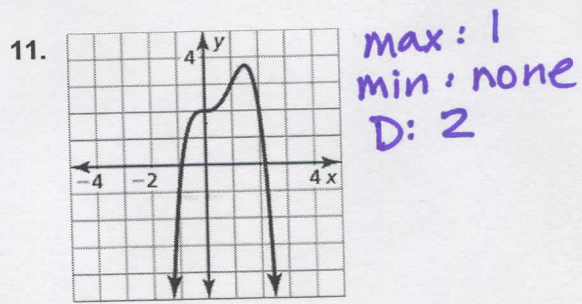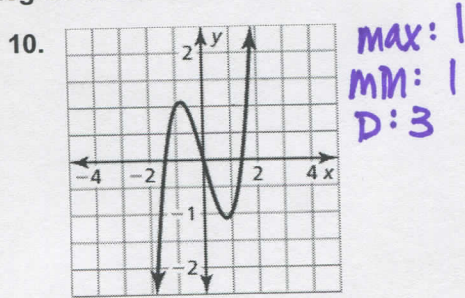   max: none
   Inc: $(-0.521, \infty)$
   Dec: $(-\infty, -0.521)$
   D: $(-\infty, \infty)$
   R: $[-2, \infty)$

10 – 11: State the number of local maximums and local minimums. Then find the least possible degree of the function.

10.

max: 1
min: 1
D: 3

11.

max: 1
min: none
D: 2

12 – 17: Match the function with its graph.

12. $f(x) = (x - 2)(x - 3)(x + 3)$ **B**

13. $f(x) = (x - 3)^2(x - 2)$ **A**

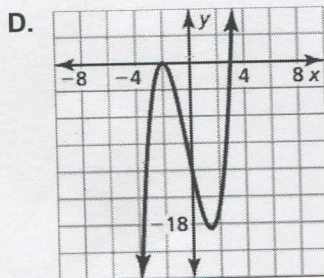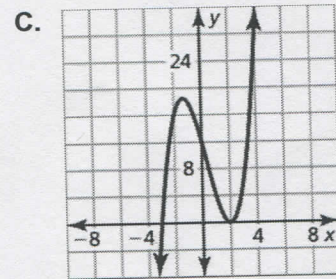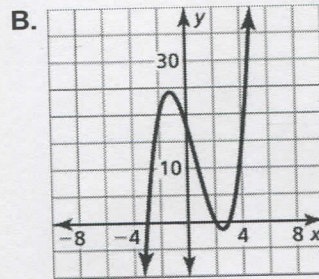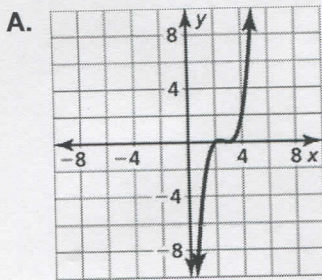14. $f(x) = (x + 2)(x + 3)(x - 3)$ **E**

15. $f(x) = (x + 2)^2(x - 3)$ **D**

16. $f(x) = (x + 3)^2(x - 2)$ **F**

17. $f(x) = (x - 2)^2(x + 3)$ **C**

A.

B.

C.

D.

E.

F.

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*
Rate your mastery level!
How confident are you with the skills this CYU covered? Circle the score you would give yourself.

| 1 2 | 3 4 5 | 6 7 | 8 |

Basic   Intermediate   Advanced   Solved ALL!