

# 1.5A Polynomial Functions and Complex Zeros

AP Precalculus

Name: \_\_\_\_\_

**For each polynomial function, find the intervals for each condition.**

1.  $h(x) = -x^2 + 8x - 7$ . When is  $h(x) \leq 0$ ?

2.  $p(x) = x(x - 2)^4(x - 4)^3(x + 8)$ . When is  $p(x) \leq 0$ ?

3.  $f(x) = x^2(x + 6)(x - 1)^6(x + 3)^3$ . When is  $f(x) \geq 0$ ?

4.  $g(x) = x^3 - x^2 - 12x$ . When is  $g(x) \geq 0$ ?

**For each polynomial, the degree is listed along with all of its real zeros. Find the number of NON-REAL zeros the polynomial has.**

5. The degree is 4 with real zeros at  $x = -4$  and  $x = 4$ .

6. The degree is 13 with real zeros at  $x = -9$ ,  $x = 0$ , and  $x = 13$ .  $x = 0$  has a multiplicity of 5.

7. The degree is 5 with real zeros at  $x = 3$  and  $x = 8$ .  $x = 3$  has a multiplicity of 4.

Given one non-real zero of a polynomial, find another zero.

8.  $-9 + 2i$

9.  $3 - 7i$

Find the degree of the polynomial from the given input and output values.

10.

<b>Input</b>	0	1	2	3	4	5	6	7
<b>Output</b>	7	3	5	31	99	227	433	735

11.

<b>Input</b>	0	1	2	3	4	5	6	7
<b>Output</b>	8	17	58	113	116	-47	-538	-1567

Answers to 1.5A CA #1

1. $(-\infty, 1] \cup [7, \infty)$	2. $(-\infty, -8] \cup [0, 4]$	3. $(-\infty, -6] \cup [-3, \infty)$	4. $[-3, 0] \cup [4, \infty)$			
5. 2	6. 6	7. 0	8. $-9 - 2i$	9. $2 + 7i$	10. 3	11. 4