

Name _____

Date _____

Characteristics of Polynomial Graphs & Zeros

Describe the nature of the zeros for each polynomial function given.

1. $f(x) = x^3 + 6x^2 - x - 30$

2. $f(x) = x^3 + 9x^2 + 20x + 6$

3. $f(x) = x^3 - 5x^2 - 23x - 117$

4. $f(x) = x^4 + 4x^3 - 14x^2 - 116x - 195$

Determine the number of real zeros for each function given.

5. $f(x) = x^3 + 3x^2 - 53x + 9$

6. $f(x) = x^4 + 3x^3 - 29x^2 - 83x + 348$

Determine the rational zeros for the each function given.

7. $f(x) = x^3 - 5x^2 - 2x + 24$

8. $f(x) = x^3 - 19x^2 + 105x - 13$

9. $f(x) = x^4 - 2x^3 - 18x^2 + 14x + 5$

10. $f(x) = x^4 + 5x^3 - 57x^2 - 505x - 1044$

State if the given binomial is a factor of the given polynomial.

11) $(3v^3 + 6v^2 - 39v + 26) \div (v + 5)$

12) $(x^3 + 8x^2 + 12x - 9) \div (x + 3)$

13) $(v^3 + 6v^2 - 50v - 99) \div (v + 10)$

14) $(x^3 + 14x^2 + 50x + 45) \div (x + 9)$

15) $(8v^3 - 37v^2 + 23v - 12) \div (v - 4)$

16) $(m^3 - 6m^2 + 2m + 21) \div (m - 3)$

17) $(x^3 + x^2 - x + 2) \div (x + 2)$

18) $(n^3 + 10n^2 + 10n + 9) \div (n + 9)$