

Name: _____ Period: _____

**Secondary Math III
Module 3 PRACTICE TEST
Polynomials**

Directions: Show all work.

Identify the following functions as linear, exponential, quadratic, cubic, quartic or logarithmic.

1. _____

x	Y
0	2
1	5
2	14
3	29
4	50

2. _____

x	y
0	9
1	10
2	11
3	12

3. _____

x	y
0	2
1	3
2	10
3	29
4	66

Use the equations below to answer questions 4-7.

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

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

$$h(x) = x^3 + 4$$

4. Find $f(x) + g(x)$

5. Find $g(x) - f(x)$

6. Find $f(x) \cdot g(x)$

7. Find $f(x)[h(x) + g(x)]$

Solve for x in questions 8-10.

8. $(x - 1)(x + 5)(x + 2) = 0$

9. $x^2 - 2x - 15 = 0$

10. $4x^2 - 36 = 0$

For 11-12: Use the Remainder Theorem to determine if the following are roots of the given polynomial; State the remainder and YES OR NO, it is a root/factor.

11. $(n^3 - 2n^2 + 9n - 18); f(2)$

12. $(x^3 - 19x - 30) \div (x + 3)$.

For 13-14: Write a polynomial for the given information in Factored Form AND Standard Form:

13. Given: leading coefficient of -3, and the following roots: 1, -2, and 4

Factored: _____

14. Given: leading coefficient of 2, and the following roots: 3, 5i, and _____.

Factored: _____

Standard: _____

Standard: _____

For 15-16: Divide the following polynomials to factor COMPLETELY, state ALL roots.

15.

$$x + 3 \sqrt{x^3 + 3x^2 - 4x - 12}$$

16.

$$x - 1 \sqrt{x^3 - x^2 + 5x - 5}$$

X= _____ , _____ , _____

X= _____ , _____ , _____

Graph the following functions, make sure to label all points clearly.

17. $f(x) = (x + 2)(x - 1)(x - 4)$

Roots, including multiplicity:

Degree of function: _____

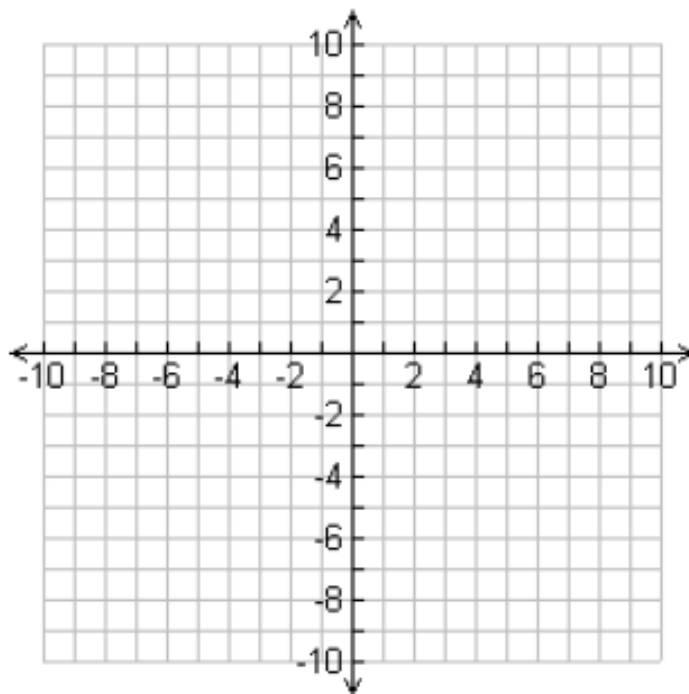
Degree: (circle) odd or even

Leading coefficient: positive or negative

End Behavior:

As $x \rightarrow -\infty, f(x) \rightarrow$ _____.

As $x \rightarrow \infty, f(x) \rightarrow$ _____.



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

Roots, including multiplicity:

Degree of function: _____

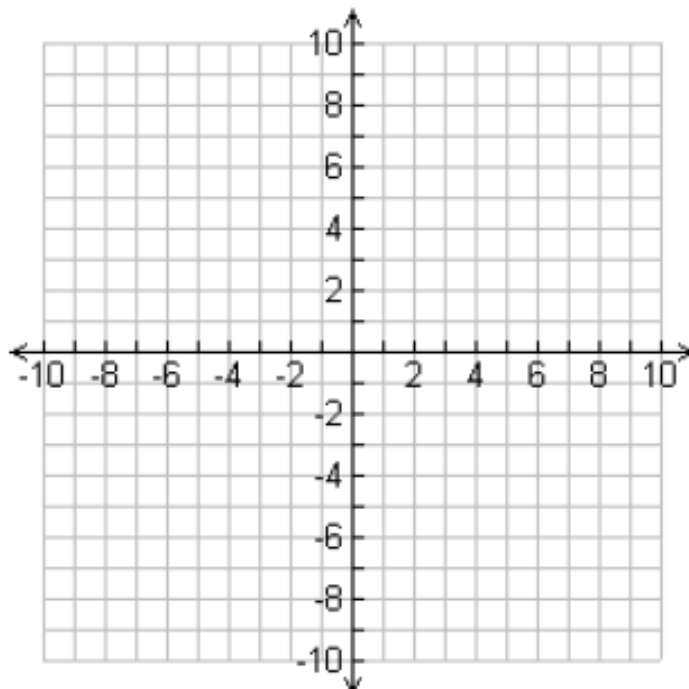
Degree: (circle) odd or even

Leading coefficient: positive or negative

End Behavior:

As $x \rightarrow -\infty, f(x) \rightarrow$ _____.

As $x \rightarrow \infty, f(x) \rightarrow$ _____.



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

Roots, including multiplicity:

Degree of function: _____

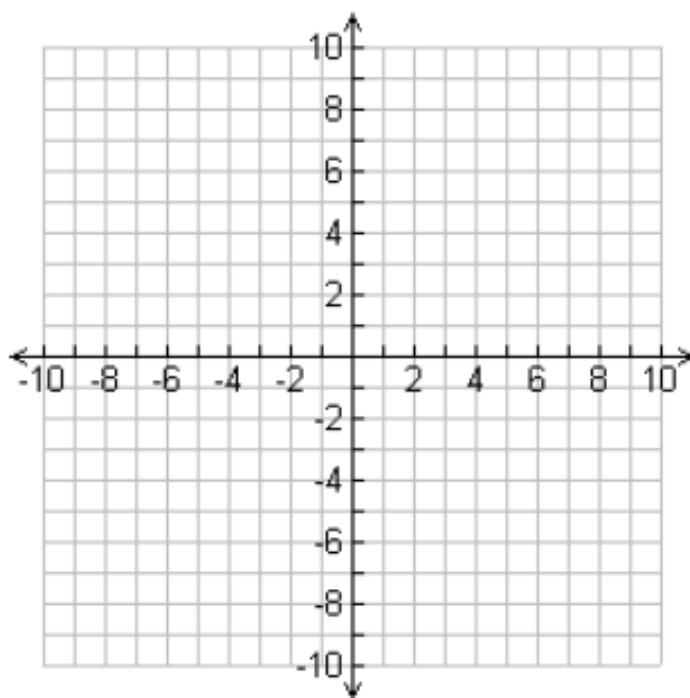
Degree: (circle) odd or even

Leading coefficient: positive or negative

End Behavior:

As $x \rightarrow -\infty, f(x) \rightarrow$ _____.

As $x \rightarrow \infty, f(x) \rightarrow$ _____.



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

Roots, including multiplicity:

Degree of function: _____

Degree: (circle) odd or even

Leading coefficient: positive or negative

End Behavior:

As $x \rightarrow -\infty, f(x) \rightarrow$ _____.

As $x \rightarrow \infty, f(x) \rightarrow$ _____.

