**Graphing Polynomials Study Guide** **Name** _____

**Given the polynomials below, Identify the y-intercept.**

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

2. $f(x) = -4x^4 - 5x^3 + 2x^2 + 4x + 5$ (____, ____)

**How many solutions does the polynomial below have? Also, identify the degree and name the function.**

3. $f(x) = -2x^3 + 6x^2 - 5x + 3$
# of solutions: _____
Degree: _____
Name of function: _____

4. $f(x) = 2x^4 + x^3 - x^2 + 4x + 3$
# of solutions: _____
Degree: _____
Name of function: _____

**Write the polynomial function in factored form that has zeros:**

5. 1, -2, 5

6. 4, 3i, -3i

7. 0, -1, -6, 9

a) x(x – 1)(x – 6)(x + 9)
b) x(x + 1)(x + 6)(x - 9)
c) x(x – 1)(x + 6)(x + 9)
d) x(x + 1)(x – 6)(x - 9)

**Find all zeros of the polynomial function. One factor has been given**

8. $x^3 - 7x^2 - 9x + 63 = 0; \quad x + 3$

a) x= -3, x = -3, x = 7
b) x = 3, x = -3, x = -7
c) x = 3, x = -3, x = 7
d) x = -3, x = -3, x = -7

9. $2x^3 - 23x^2 + 85x - 100 = 0; \quad x - 5$

a) x = 5, x= 4, x = 5/2
b) x = -5, x = -4, x = -5/2
c) x = 5, x = -4, x = 5/2
d) x = -5, x = 4, x = -5/2

10. $3x^3 - 2x^2 - 61x - 20 = 0; \quad x + 4$

11. $x^3 - 10x^2 + 31x - 30 = 0; \quad x - 2$

**Find all zeros of the polynomial function. One zero has been given**

12. $2x^3 - 7x^2 + 2x + 3 = 0; \quad 3$

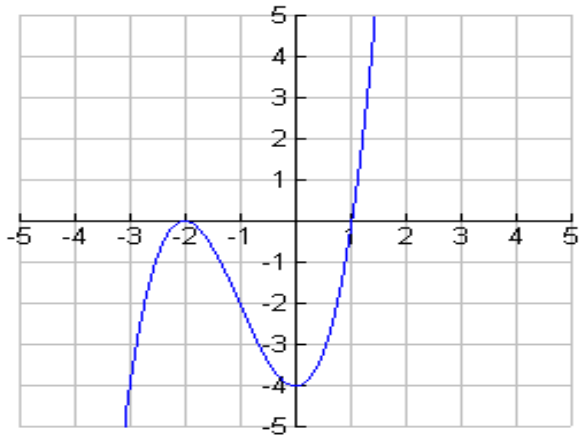
13. $x^3 + 7x^2 + 2x - 40 = 0; \quad -5$

14. $x^3 - 5x^2 - 9x + 45 = 0; \quad 5$

a) x = 5, x = 3, x = -3
b) x = 5, x= 3, x = 3
c) x = -5, x = -3, x = -3
d) x = -5, x = 3, x = -3

15. $x^3 + x^2 - 17x + 15 = 0; \quad -5$

| | | | |
|---|---|---|---|
| **Degree & Name** | | **Relative Maximum** | (____, ____) |
| **Domain** | (____, ____) | **Relative Minimum** | (____, ____) |
| **Range** | (____, ____) | **Intervals of Increase** | (____, ____) & (____, ____) |
| **y-intercept** | (____, ____) | **Interval of Decrease** | (____, ____) |
| **x-intercept(s)** | (____, ____), (____, ____), (____, ____) | **Symmetry (even, odd, Neither)** | |
| **Left end behavior** | As x → -∞, y → ___ | | |
| **Right end behavior** | As x → ∞, y → ___ | | |




| | | | |
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| **Degree & Name** | | **Relative Maximum** | (____, ____) |
| **Domain** | (____, ____) | **Relative Minimum** | (____, ____) |
| **Range** | (____, ____) | **Interval of Increase** | (____, ____) |
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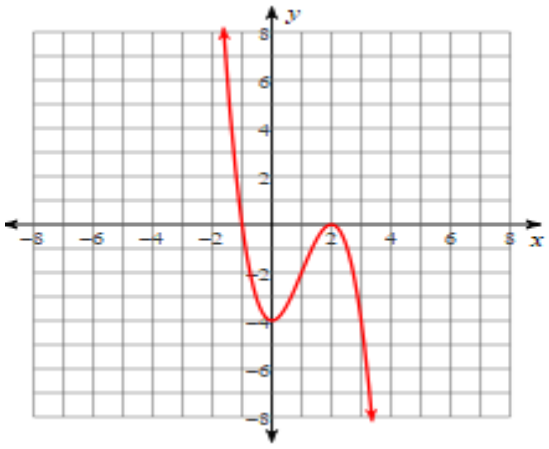


| | | | |
|---|---|---|---|
| **Degree & Name** | | **Relative Maximum** | (____, ____) |
| **Domain** | (____, ____) | **Absolute & Relative Minimum** | (____, ____) & (____, ____) |
| **Range** | [____, ____) | **Intervals of Increase** | (____, ____) & (____, ____) |
| **y-intercept** | (____, ____) | | |
| **x-intercept(s)** | (____, ____), (____, ____), (____, ____), (____, ____) | **Intervals of Decrease** | (____, ____) & (____, ____) |
| **Left end behavior** | As x → -∞, y → ____ | **Symmetry (even, odd, Neither)** | |
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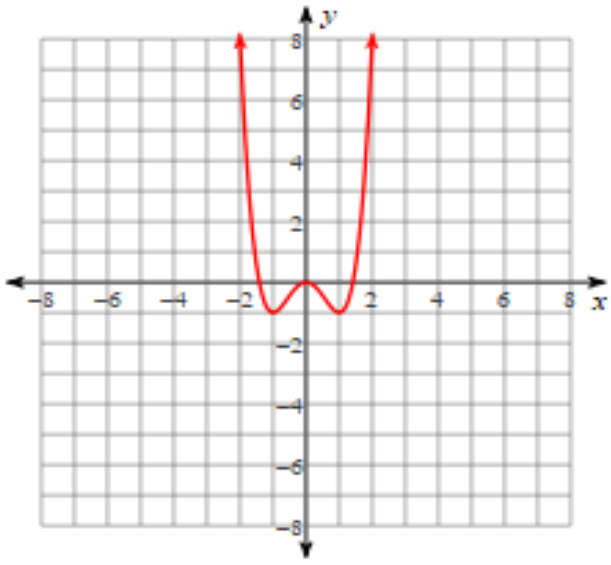

## Graphing Polynomials Study Guide

**Name** _____

| | | | |
|---|---|---|---|
| **Degree & Name** | | **Absolute & Relative Maximum** | (____, ____) & (____, ____) |
| **Domain** | (____, ____) | **Relative Minimum** | (____, ____) |
| **Range** | (____, ____] | **Intervals of Increase** | (____, ____) & (____, ____) |
| **y-intercept** | (____, ____) | | |
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