

Name _____

FOM 3 Unit 2: Polynomials

Monday	Tuesday	Wednesday	Thursday	Friday
				September 13 <ul style="list-style-type: none">• Polynomial operations HW: worksheet 2.1
September 16 <ul style="list-style-type: none">• Synthetic division HW: worksheet 2.2	September 17 <ul style="list-style-type: none">• QUIZ!!!• Synthetic division HW: worksheet 2.3	September 18 <ul style="list-style-type: none">• Remainder and Factor theorems HW: worksheet 2.4	September 19 <ul style="list-style-type: none">• Zeros from graphs• End behavior HW: worksheet 2.5	September 20 <ul style="list-style-type: none">• Extrema• Intervals for increasing and decreasing HW: worksheet 2.6
September 23 <ul style="list-style-type: none">• All graph features HW: worksheet 2.7	September 24 <ul style="list-style-type: none">• Polynomial Practice HW: finish practice	September 25 <ul style="list-style-type: none">• Review for test HW: finish review	September 26 <ul style="list-style-type: none">• TEST!!!	

2.1 - Operations with Polynomials

Simplify each expression. Pay close attention to whether you are adding, subtracting, or multiplying!!

1. $(5p^2 - 3) + (2p^2 - 3p^3)$

2. $(2n + 2)(6n + 1)$

3. $(4r^3 + 3r^4) - (r^4 - 5r^3)$

4. $6v(2v^5 + 3)$

5. $(2a - 1)(8a - 5)$

6. $(-7c^3 - 9c^2 + 8c^4) - (7c - 7c^2 - 7c^4 + 8c^3)$

7. $(x - 3)^2$

8. $7gh(5g^2 + 3gh - h^3)$

9. $(3 - 6n^5 - 8n^4) - (-6n^4 + 3n - 8n^5)$

10. $(3m^2 + 4)^2$

11. $(3k - 1)(8k + 7)$

12. $(5m^3 - 2m - 7) + (4m^4 + 2m - 3)$

13. $-3x^4y(2y^4 - 5y + 5z^2)$

14. $(3x - 7)(3x + 7)$

2.2 - Synthetic Division

Use synthetic division to simplify each expression.

1. $(r^3 - 6r^2 - 2r + 14) \div (r - 1)$

2. $(b^3 - 6b^2 + 13b - 10) \div (b - 3)$

3. $(x^4 + 14x^3 + 52x^2 + 26x - 36) \div (x + 5)$

4. $(n^3 + 13n^2 + 38n - 19) \div (n + 8)$

5. $(3m^3 - 21m^2 - 93m + 25) \div (m - 10)$

6. $(9a^4 + 29a^3 - 18a^2 + 49a + 43) \div (a + 4)$

2.3 - More Synthetic Division

Use synthetic division to simplify each expression.

1. $(n^5 - 9n^4 - n^2 + 4n + 41) \div (n - 9)$

2. $(8v^2 + 50v + 14) \div (v + 6)$

3. $(24m - 13m^2 + m^3 + 18) \div (m - 3)$

4. $(5k^4 + 10k^3 + 4k^2 - 26) \div (k + 2)$

5. $(p^3 + 64) \div (p + 4)$

6. $(3x^4 + 2x^3 - 5x + 4) \div (x - 1)$

7. $(n^4 - 10n^3 + 25n^2 + n - 32) \div (n - 6)$

8. $(7 + 9f^2 + 2f^4 - 3f) \div (f - 2)$

2.4 - Remainder and Factor Theorems

1. Determine the remainder when $x^3 + 2x^2 - 3x + 1$ is divided by $x + 6$. Is $x + 6$ a factor?
2. Determine the remainder when $7x^4 - 9x$ is divided by $x - 3$. Is $x - 3$ a factor?
3. Determine the remainder when $2x^3 + 11x^2 - 42x - 216$ is divided by $x + 4$. Is $x + 4$ a factor?
4. Determine the remainder when $5x^8 + 3x^2 - 2$ is divided by $x + 8$. Is $x + 8$ a factor?

Use synthetic division to simplify each expression.

5. $(x^3 + 6x^2 - 3x) \div (x - 5)$

6. $(2x^4 - 4x^3 + 7x + 2) \div (x + 1)$

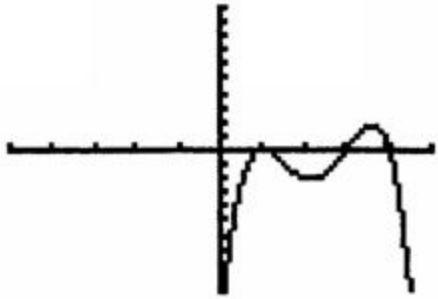
7. $(7x^2 - 9x - 1) \div (x - 2)$

8. $(21x^2 + 2x^3 + 63x + 54) \div (x + 3)$

2.5 - Zeros From Graphs

For each graph, state the zeros and their multiplicity. Then describe the end behavior and determine if the leading coefficient is positive or negative and has an even or odd exponent.

1.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

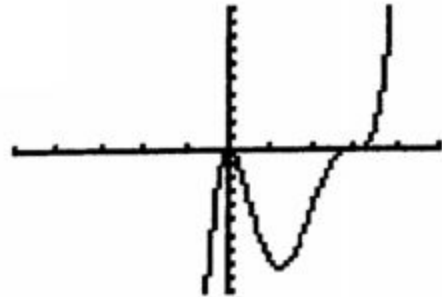
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

2.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

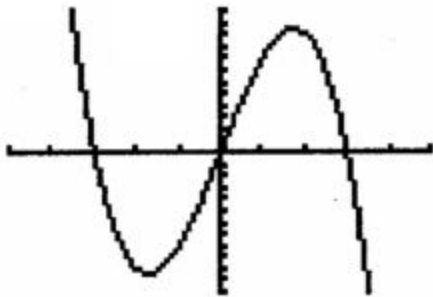
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

3.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

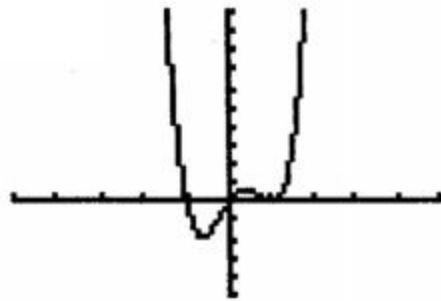
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

4.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

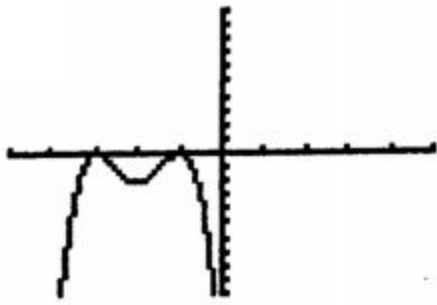
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

5.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

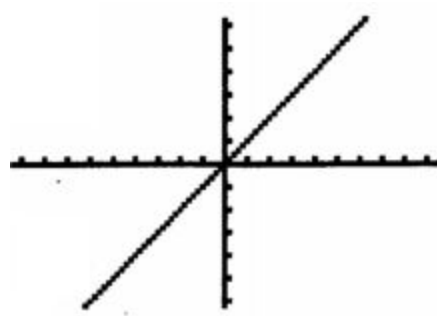
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

6.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

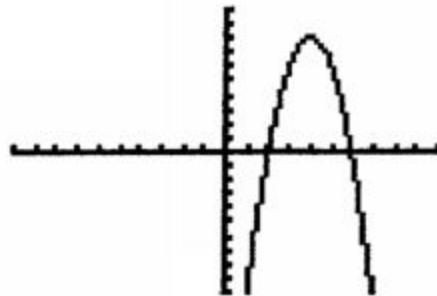
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

7.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

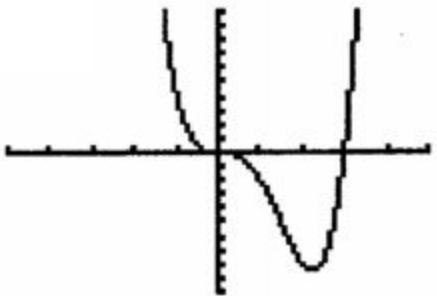
right approaches: $-\infty$ or ∞

left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

8.



x = _____ multiplicity: _____

x = _____ multiplicity: _____

x = _____ multiplicity: _____

right approaches: $-\infty$ or ∞

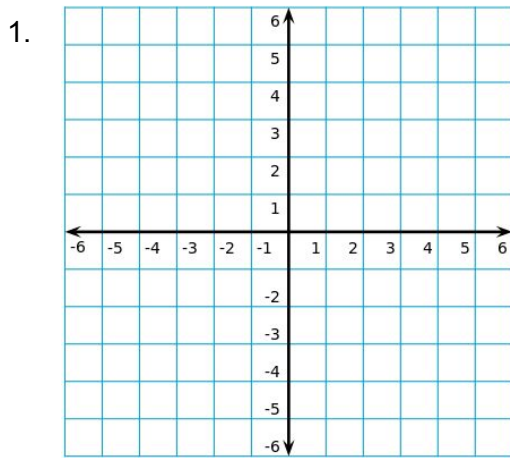
left approaches: $-\infty$ or ∞

leading coefficient: positive or negative

leading exponent: even or odd

2.6 - Extrema, Intervals for Increasing/Decreasing

For each graph, state and classify each point of extrema. Then state the intervals over which the function is increasing and decreasing.



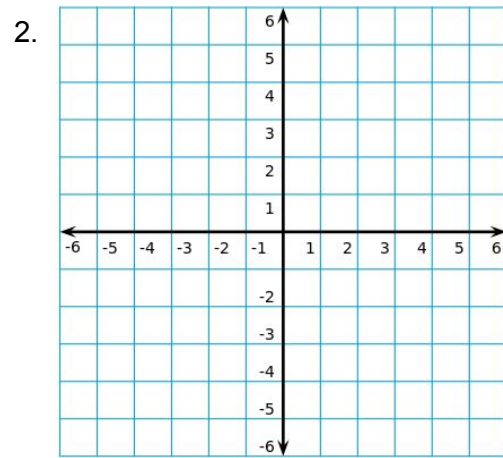
extrema: _____ type: _____

extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____



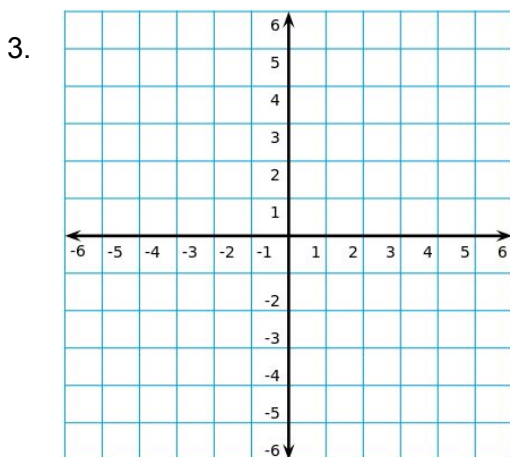
extrema: _____ type: _____

extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____



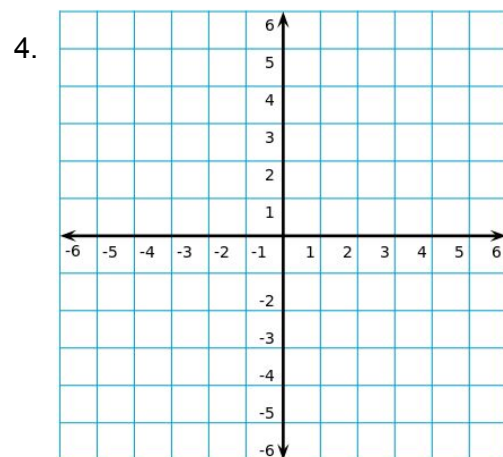
extrema: _____ type: _____

extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____



extrema: _____ type: _____

extrema: _____ type: _____

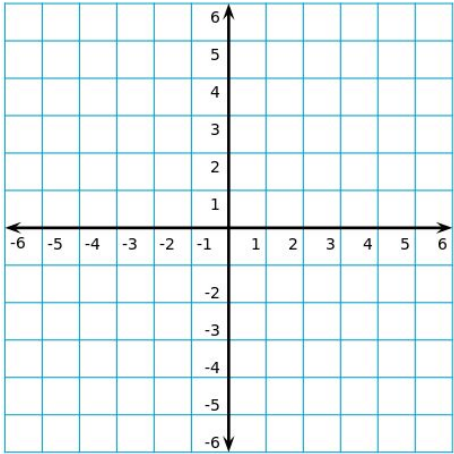
extrema: _____ type: _____

increasing: _____

decreasing: _____



5.



extrema: _____ type: _____

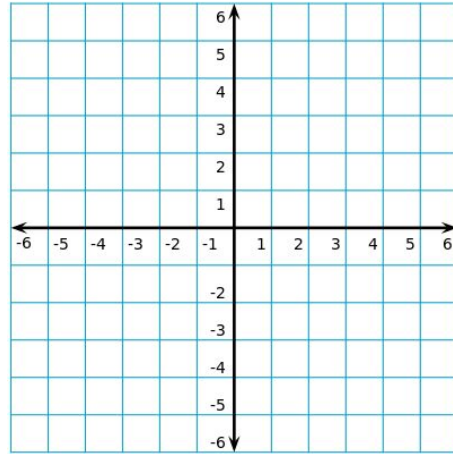
extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____

6.



extrema: _____ type: _____

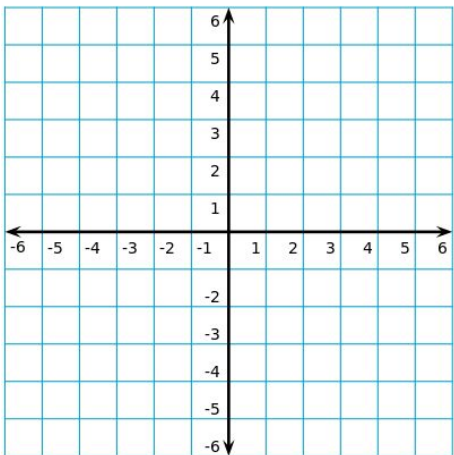
extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____

7.



extrema: _____ type: _____

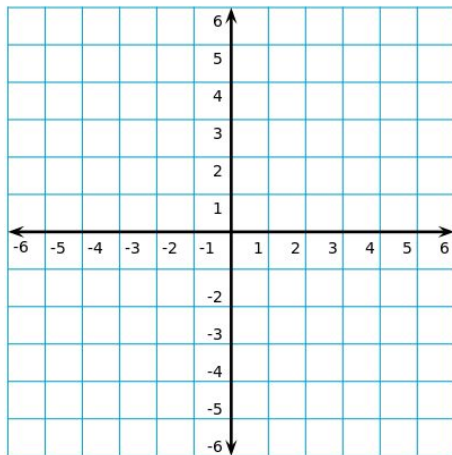
extrema: _____ type: _____

extrema: _____ type: _____

increasing: _____

decreasing: _____

8.



extrema: _____ type: _____

extrema: _____ type: _____

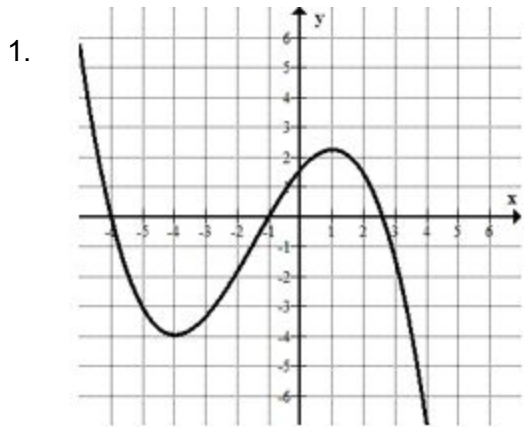
extrema: _____ type: _____

increasing: _____

decreasing: _____

2.7 - All Graph Features

For each graph, determine the zeros and their multiplicity, the end behavior, the points of extrema, and the intervals over which the function is increasing and decreasing.



zeros: _____

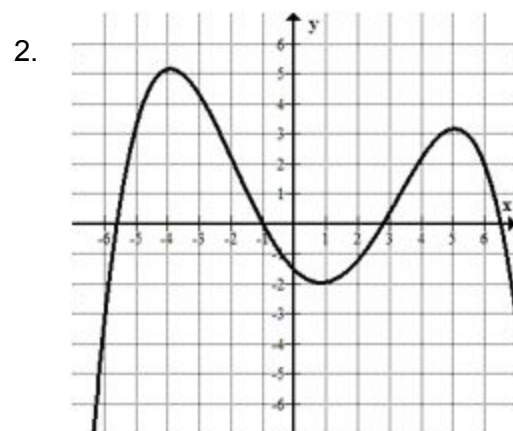
left approaches: _____

right approaches: _____

extrema: _____

increasing: _____

decreasing: _____



zeros: _____

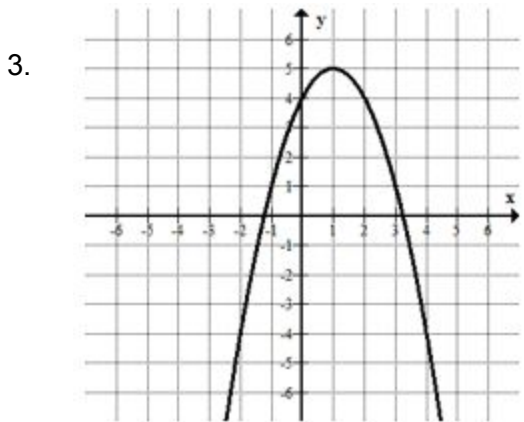
left approaches: _____

right approaches: _____

extrema: _____

increasing: _____

decreasing: _____



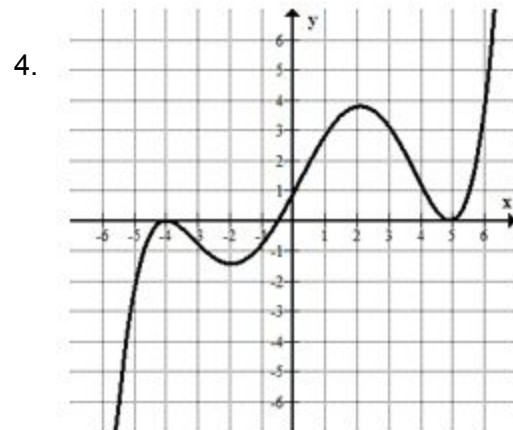
zeros: _____

left approaches: _____

right approaches: _____

extrema: _____

increasing: _____



zeros: _____

left approaches: _____

right approaches: _____

extrema: _____

increasing: _____

decreasing: _____

decreasing: _____