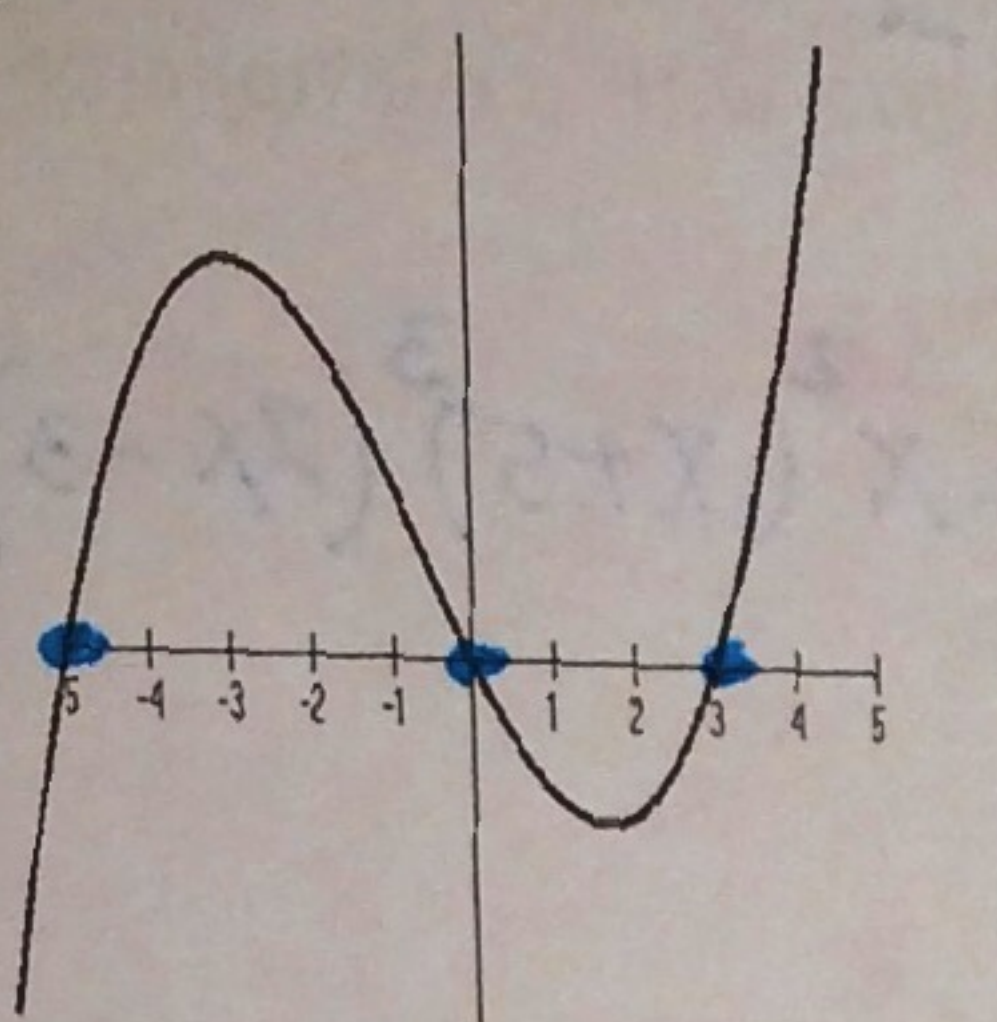
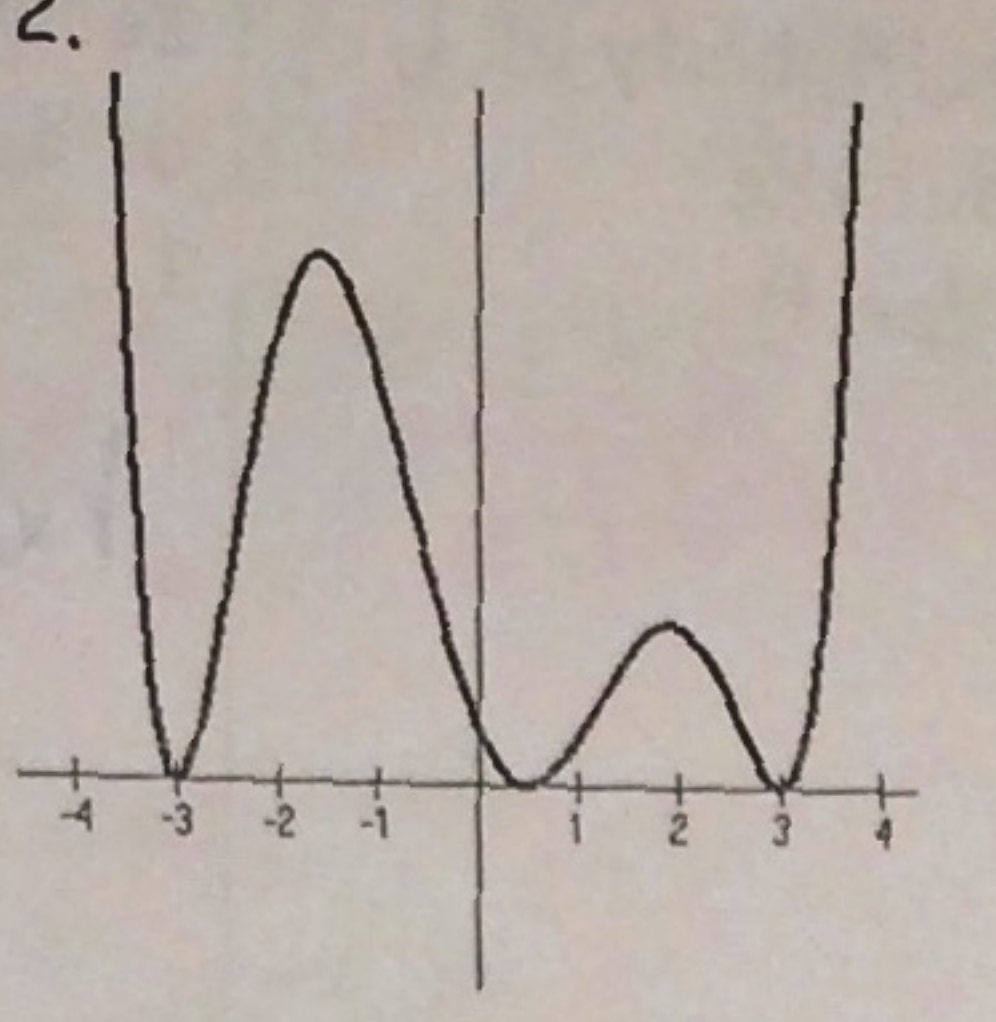
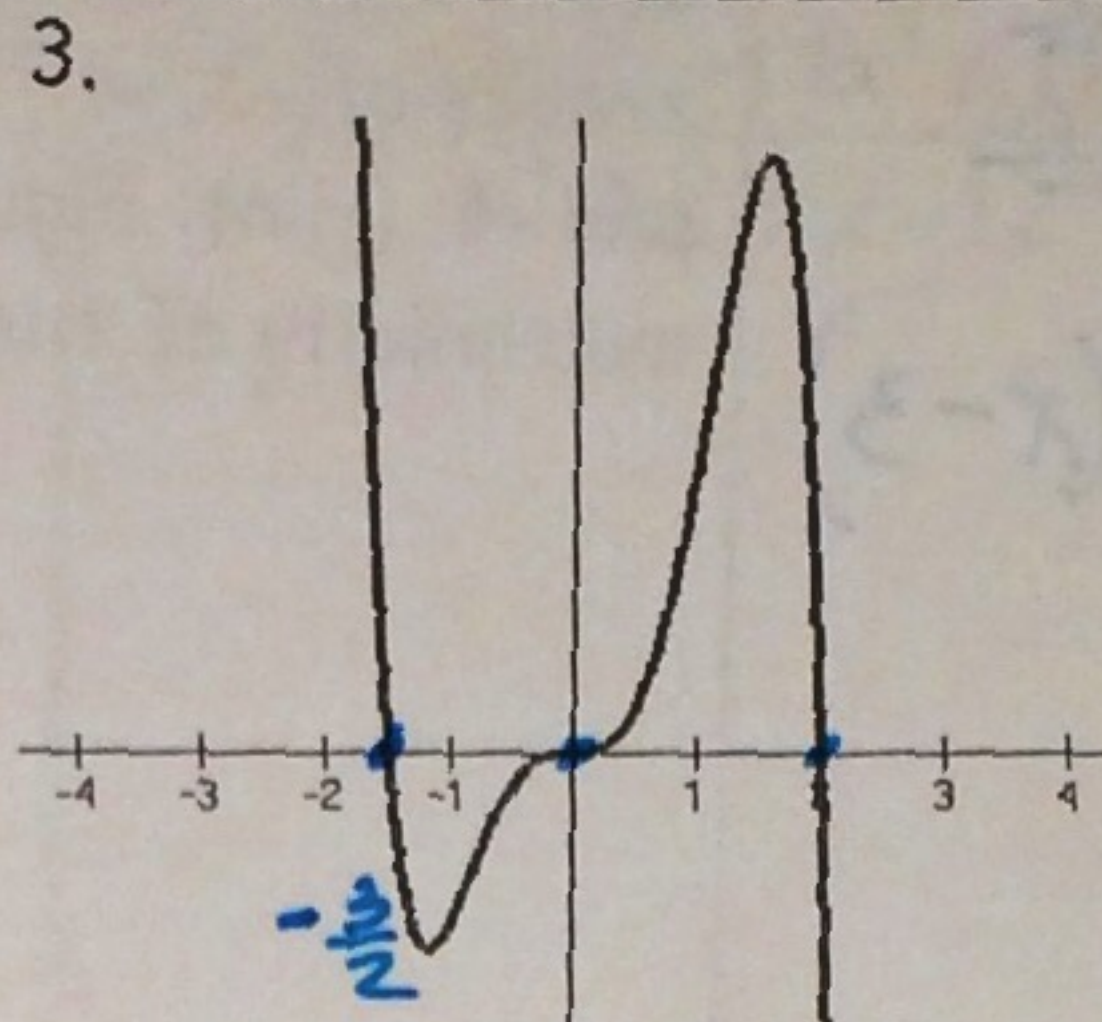
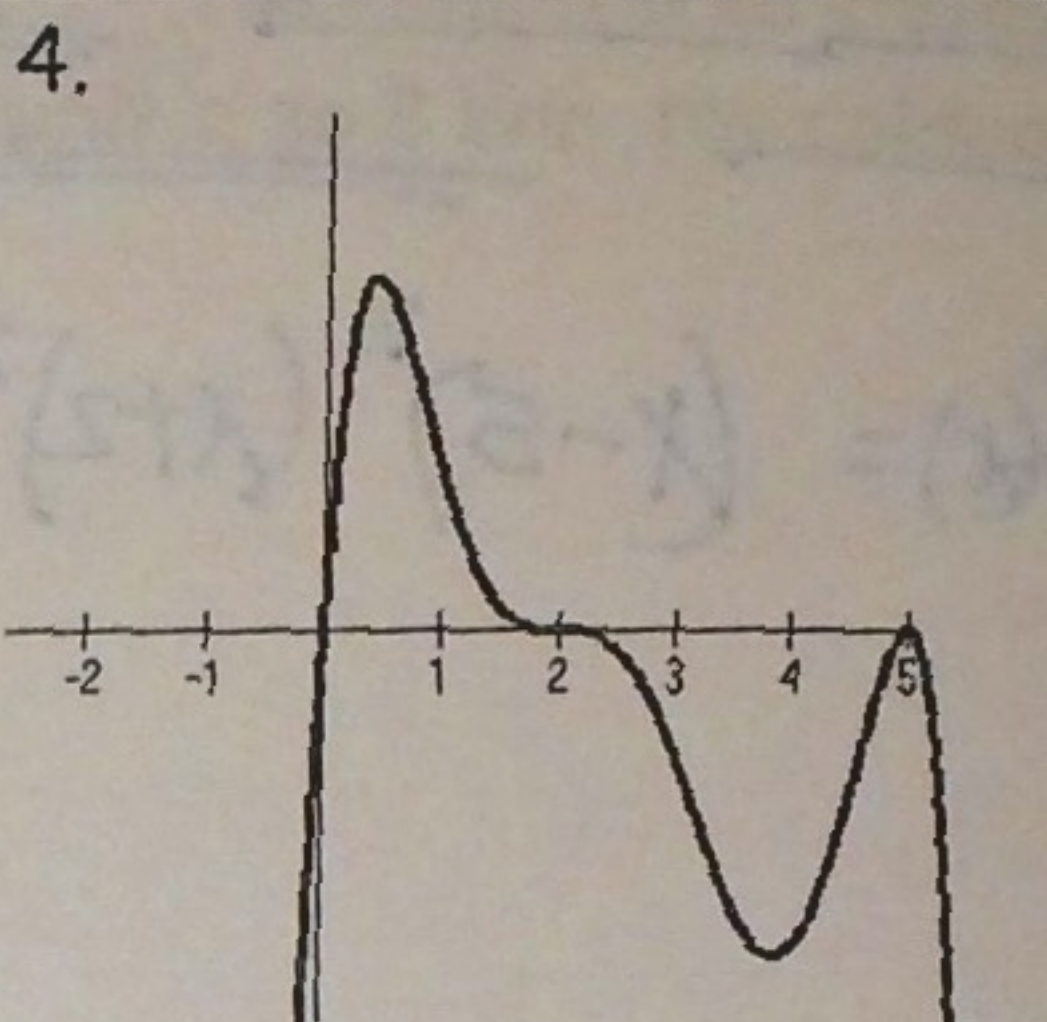


#3D Pre-Calculus Worksheet

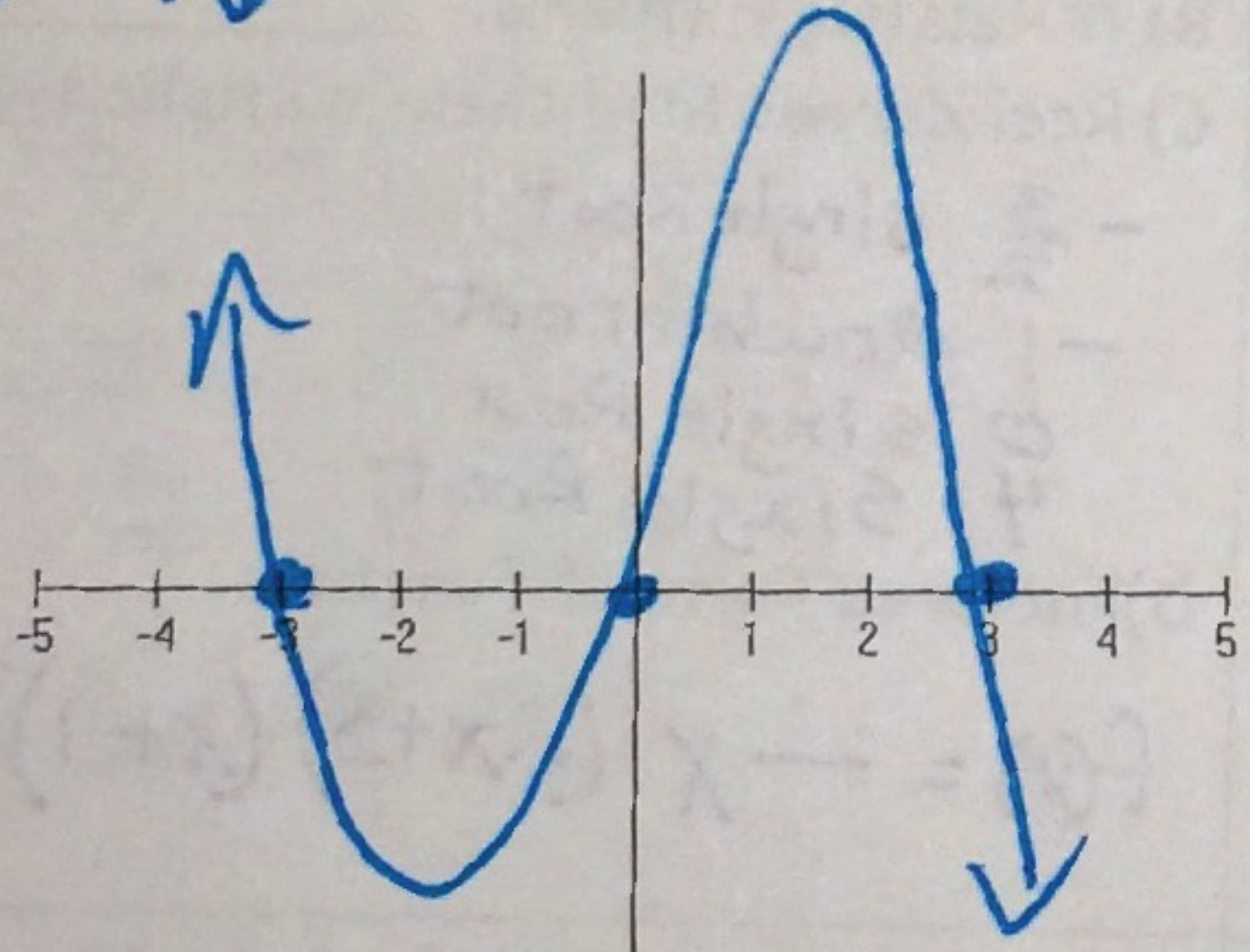
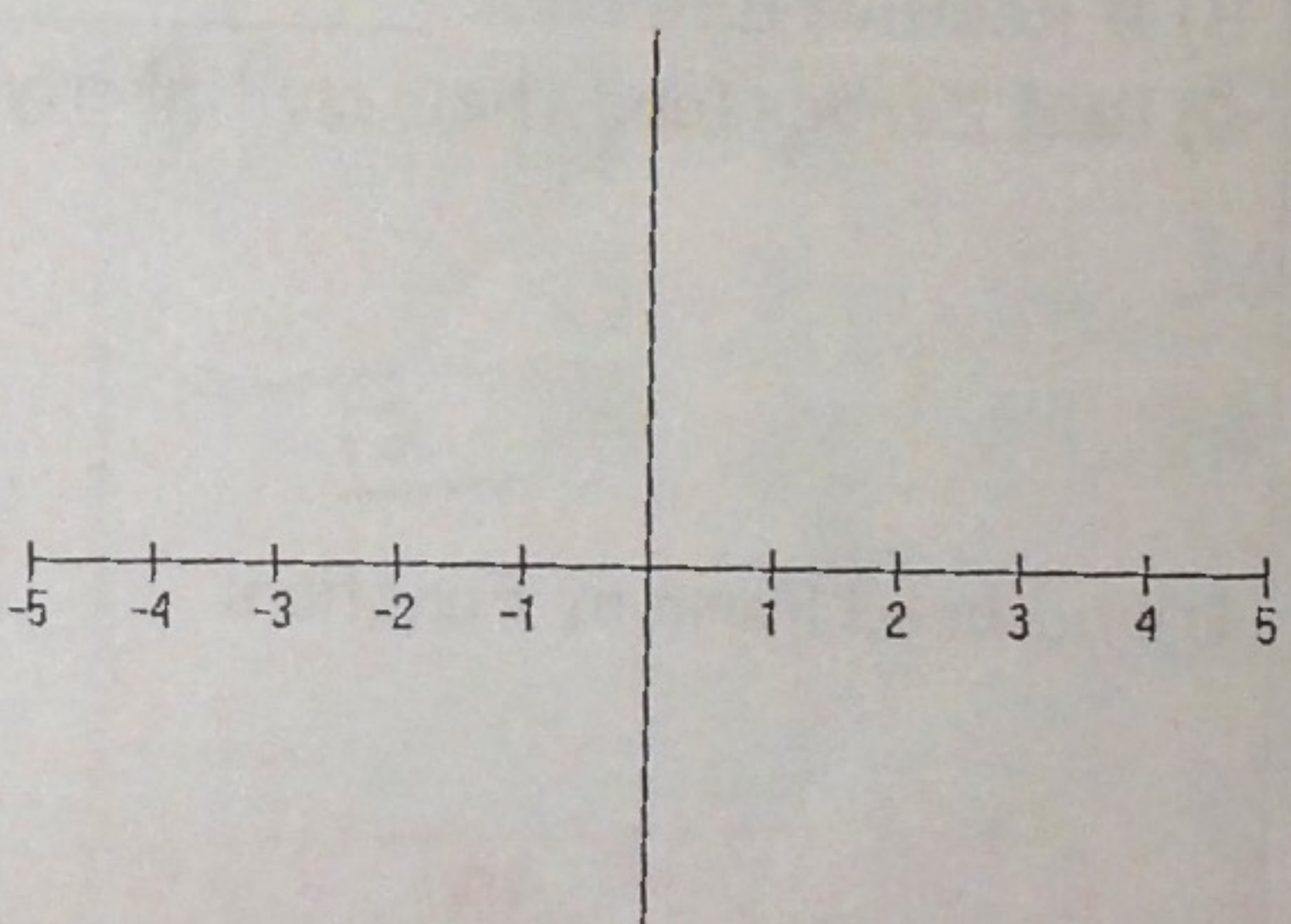
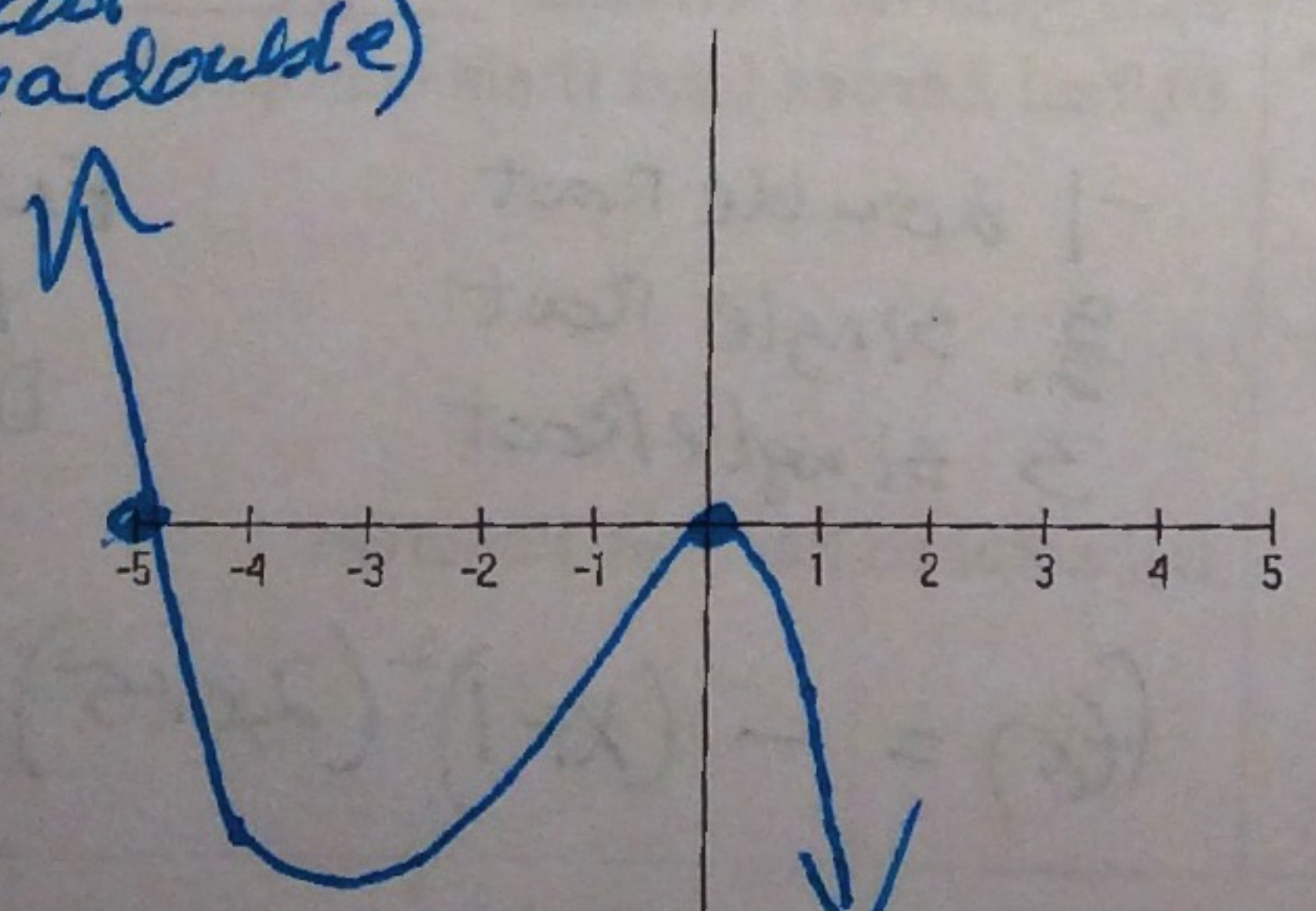
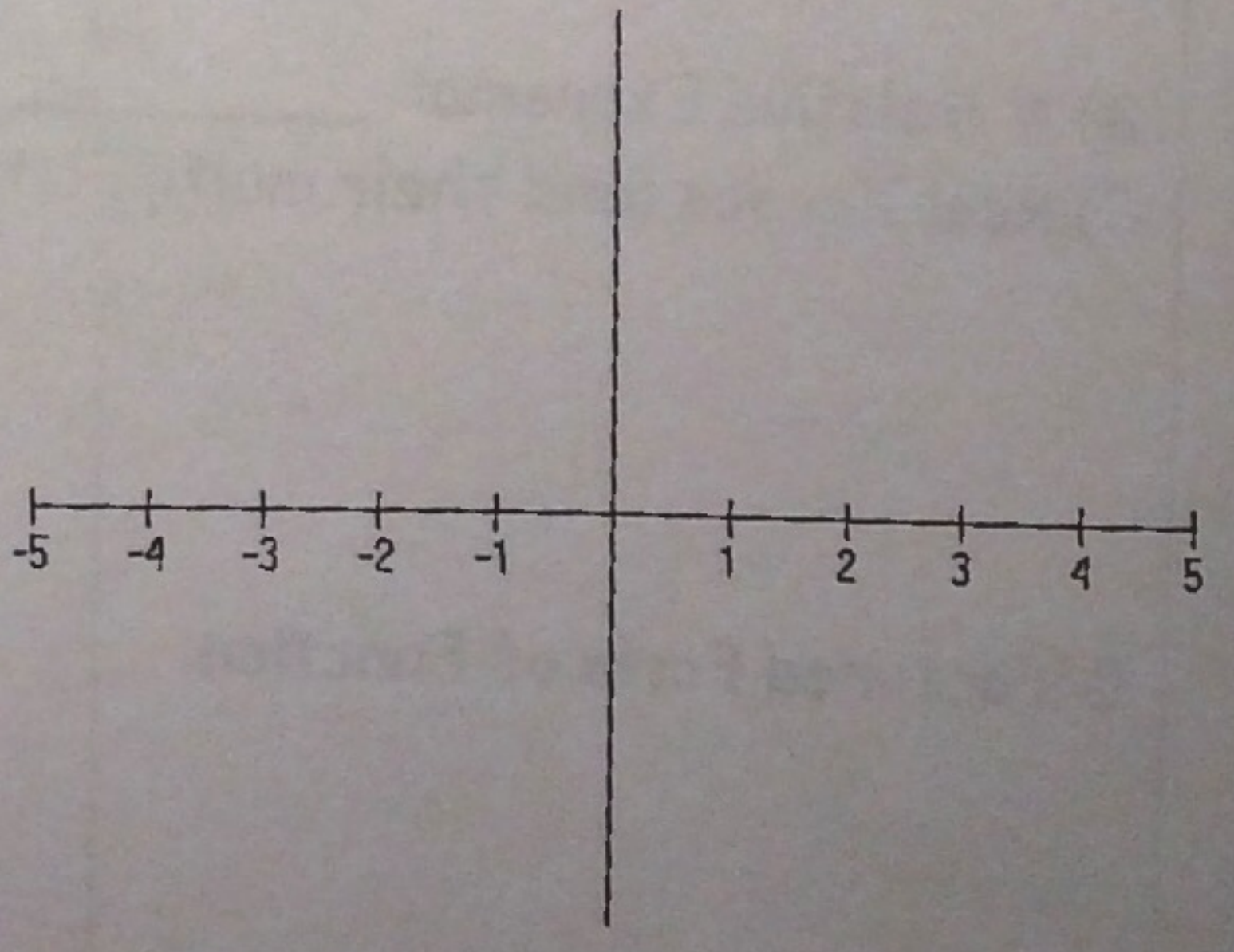
Name: Key

Section 2.2 - Polynomial Functions DAY TWO

Determine a possible equation for the polynomial (in factored form) given the graph.

<p>1.</p>  <p>$f(x) = (x+5)(x-3)x$</p>	<p>2.</p>  <p>$f(x) =$ _____</p>	<p>3.</p>  <p>$f(x) = x^3(2x-3)(x-2)$</p>	<p>4.</p>  <p>$f(x) =$ _____</p>
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Factor each polynomial. Then identify its roots (and their multiplicity) along with its end behavior if order to sketch a graph of the function WITHOUT the calculator.

<p>5. $f(x) = -x^3 + 9x$ $f(x) = -x(x^2 - 9)$ $f(x) = -x(x+3)(x-3)$ R: 0, -3, 3 $\uparrow \downarrow$</p> 	<p>6. $f(x) = 3x^3 - 15x^2 + 18x$</p> 
<p>7. $f(x) = -5x^4 - x^5$ $f(x) = -x^4(5+x)$ Roots: 0, -5 4th root (just like a double) odd and negative $\uparrow \downarrow$</p> 	<p>8. $g(x) = x^4 - 10x^2 + 9$</p> 

Write a possible equation, in factored form, for a polynomial.

9. $f(x)$ has a degree of 6 with roots 5 as a triple root, -2 as a double root, and 3 as a single root.

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

10. $g(x)$ a negative leading coefficient and a degree of 4, with zeroes of -3, with a multiplicity of 1, and -4. (Hint: Figure out the multiplicity of the -4 zero!)

11. $h(x)$ has a degree of 6 with a positive leading coefficient and zeroes of 0, -5 with a multiplicity of 3, and $3/2$ with a multiplicity of 1.

$$h(x) = x^2 (x+5)^3 (2x-3)$$

Use a graphing calculator to graph the function.

A) Sketch a graph from the calculator, B) Number of Relative Extrema, C) Real Zeroes and their multiplicity. D) Write a possible equation for the function in factored form.

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

A)

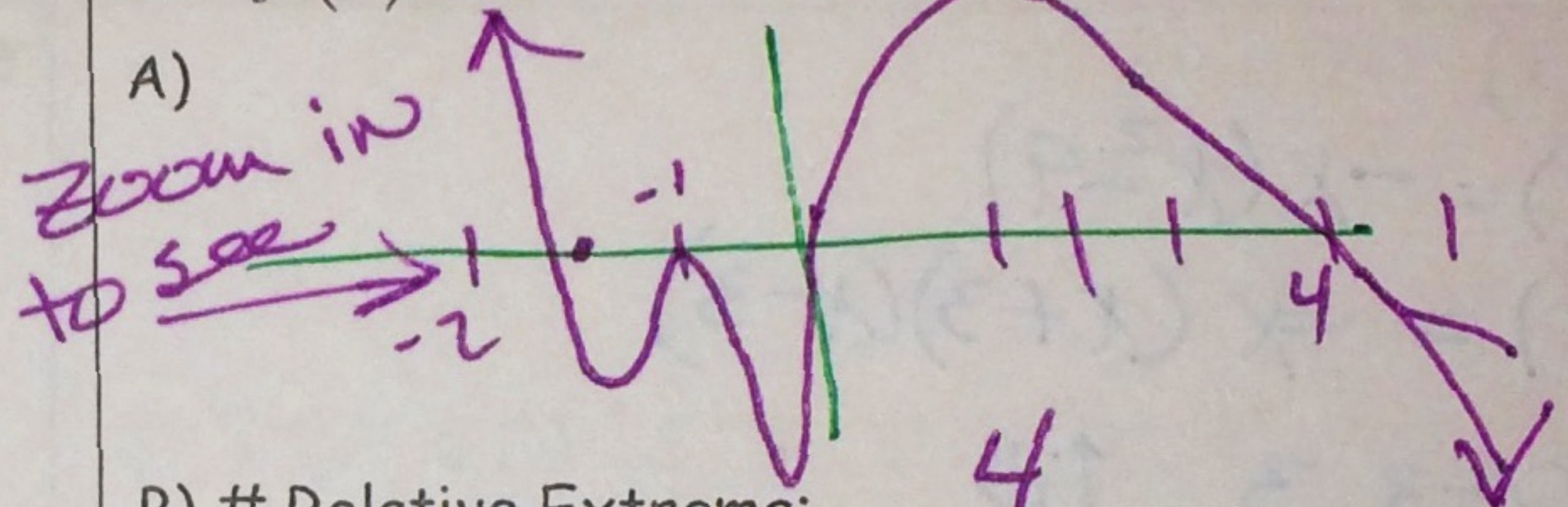
B) # Relative Extrema: _____

C) Real Zeroes (and their multiplicity):

D) Factored Form of Function:

13. $f(x) = -2x^5 + x^4 + 20x^3 + 29x^2 + 12x$

A)



B) # Relative Extrema: 4

C) Real Zeroes (and their multiplicity):

- 3/2 single root
- 1 double root
- 0 single root
- 4 single root

D) Factored Form of Function:

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

End Beh. $\uparrow \downarrow$
Degree 5
neg

14. $f(x) = x^5 + 4x^4 - 18x^3 - 108x^2 - 135x$

A)

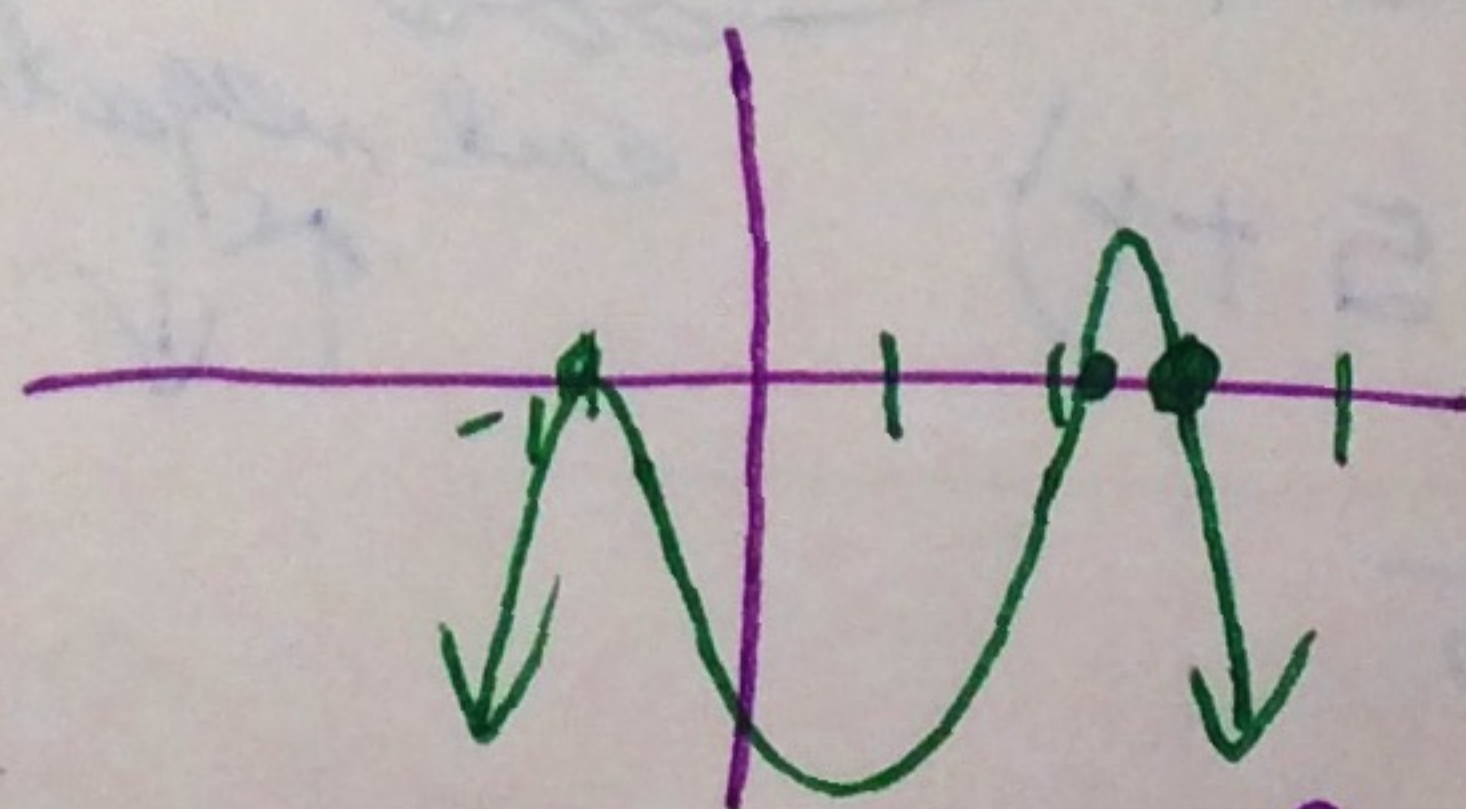
B) # Relative Extrema: _____

C) Real Zeroes (and their multiplicity):

D) Factored Form of Function:

15. $f(x) = -2x^4 + 7x^3 + 5x^2 - 19x - 15$

A)



B) # Relative Extrema: 2

C) Real Zeroes (and their multiplicity):

- 1 double root
- 5/2 single root
- 3 single root

D) Factored Form of Function:

$$f(x) = -(x+1)^2(2x+5)(x-3)$$

End Beh. $\downarrow \downarrow$
Even -
Degree 4