Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Polynomial IN CLASS Practice Hour\_\_\_\_\_\_\_\_

$$f\left(x\right)=2x^{4}+2x^{3}-12x^{2}-8x+16$$

Use technology to tell your AP Precalculus Teacher as much about this function as possible.

|  |  |
| --- | --- |
|  | * State a viewing window that will allow you to see all important features of this function.

 x min \_\_\_\_\_ x max \_\_\_\_\_\_  y min \_\_\_\_\_ y max \_\_\_\_\_\_* Your mathematics teacher designed this function to be tangent to the x axis at a single place, state that point.

 f(x) is tangent to the x axis at x = \_\_\_\_\_\_\_* State the range using bracket notation.
* Why is stating the domain for this function trivial?
 |
|  Since you are dealing with a quartic polynomial and they are very difficult to deal with for many reasons, your mathematics teacher felt that giving you two of the roots of this polynomial would be helpful in allowing to do some restructiing of the factorable quartic polynomial .* Given that x = 1 is a root of this quartic polynomial, use synthetic division to factor this quartic polynomial
* Given that x = 2 is a root of this quartic polynomial, use synthetic division to factor this quartic polynomial
* Given that both x = 1 and x = 2 are roots of this quartic polynomial, use synthetic division to factor this quartic polynomial COMPLETELY
 |

* State the local extremes of this polynomial as coordinates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$$f\left(x\right)=2x^{4}+2x^{3}-12x^{2}-8x+16$$

|  |  |
| --- | --- |
| Sketch on this graph ONLY the positive portion of f(x) labeling the important points within that domain x values that generate positive f(x) values. | * BE careful and use set notation to state the x values that guarantee that for function values are positive.

Note: [ , ] , ( , ] ( , ) and [ , ) are brackets that can be used to describe the behavior of f(x) in terms of x* Repeat the above task using inequalities and compound inequalities
 |
| Sketch on this graph ONLY the decreasing values of f(x) labeling the important points within that domain x values that generate decreasing f(x) values. | * BE careful and use set notation to state the x values that guarantee that for function values are decreasing.

Note: [ , ] , ( , ] ( , ) and [ , ) are brackets that can be used to describe the behavior of f(x) in terms of x* Repeat the above task using inequalities and compound inequalities
 |

[RELATED DESMOS GRAPH](https://www.desmos.com/calculator/kmdj79yzne)

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Polynomial HWK Hour\_\_\_\_\_\_\_\_

$$g\left(x\right)=-1x^{5}-2x^{4}+12x^{3}+40x^{2}+32x$$

Use technology to tell your AP Precalculus Teacher as much about this function as possible.

|  |  |
| --- | --- |
|  | * USE the following viewing window that will allow you to see most of the important features of this function.

 x min -6 x max -6  y min -20 y max 100* Your mathematics teacher designed this function to have a point of inflection at the point (-2, 0)
* This means the root x = -2 repeats at least three times
* Why is stating the domain or range for this function trivial?
 |
|  Since you are dealing with a quintic polynomial and they are very difficult to deal with for many reasons, your mathematics teacher felt that giving you three of the roots of this polynomial would be helpful in allowing to do some restructiing of the factorable quartic polynomial .* Given that x = -2, x = -2, and x = -2 is a repeating root of this quintic polynomial, use synthetic division to factor this quintic polynomial
* What root did you no because the absence of a constant
* State the local extremes as coordinates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Why does this type of polynomial have only local and not global extremes?
 |

$$g\left(x\right)=-1x^{5}-2x^{4}+12x^{3}+40x^{2}+32x$$

|  |  |
| --- | --- |
| Sketch on this graph ONLY the negative portion of g(x) labeling the important points within that domain x values that generate negative g(x) values. | * BE careful and use set notation to state the x values that guarantee that for function values are negative.

Note: [ , ] , ( , ] ( , ) and [ , ) are brackets that can be used to describe the behavior of f(x) in terms of x* Repeat the above task using inequalities and compound inequalities
 |
| Sketch on this graph ONLY the increasing values of g(x) labeling the important points within that domain x values that generate increasing g(x) values. | * BE careful and use set notation to state the x values that guarantee that for function values are increasing.

Note: [ , ] , ( , ] ( , ) and [ , ) are brackets that can be used to describe the behavior of f(x) in terms of x* Repeat the above task using inequalities and compound inequalities
 |

[RELATED DESMOS GRAPH](https://www.desmos.com/calculator/fjekea0b0i)