

Total pts out of 20 _____

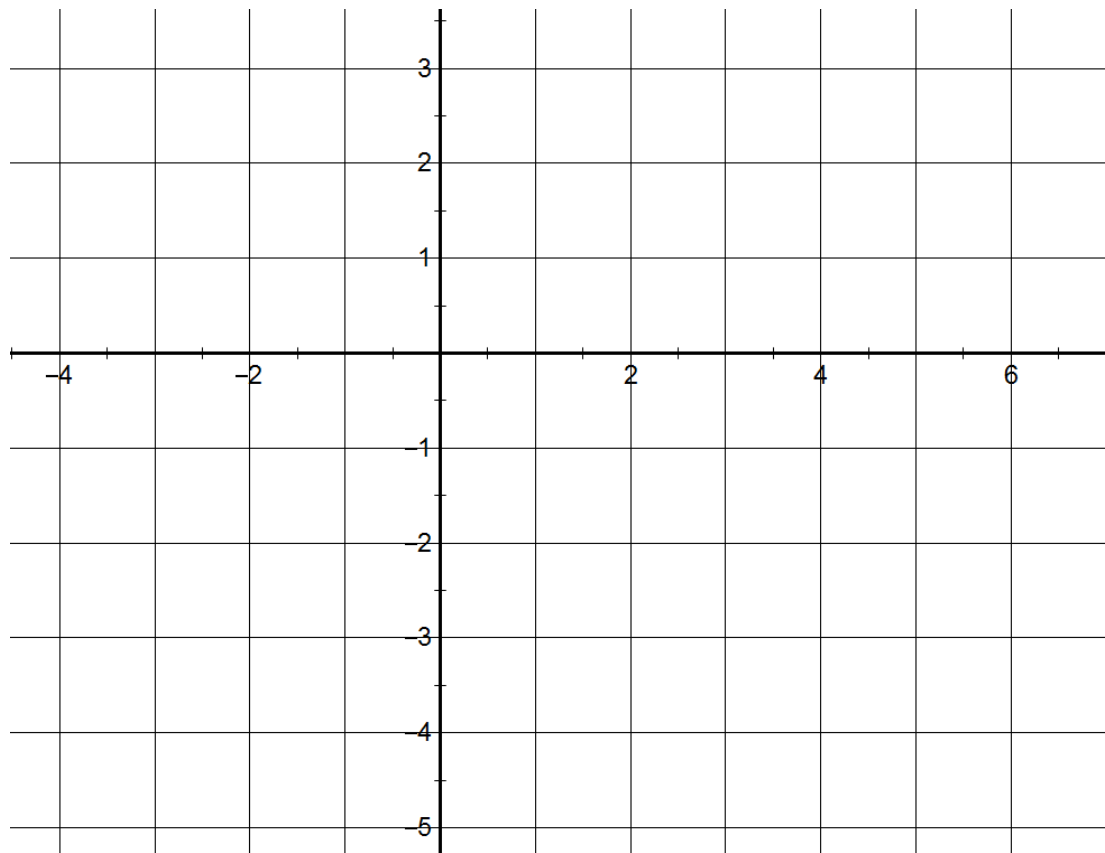
1. Sketch the graph of the polynomial function below. Please show all x -intercepts and y -intercepts. (14 pts)

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

x -intercepts are _____ y -intercept is _____

End Behavior like the monomial _____ Number of local extremum _____

Graph of the polynomial



2. How would you solve a an equation of the type
 $a(x - a_1)^{n_1}(x - a_2)^{n_2}(x - a_3)^{n_3} \dots (x - a_k)^{n_k} = 0$?

3. What is the significance of the solutions to the equation in question 7 to the graph of the polynomial function
 $f(x) = a(x - a_1)^{n_1}(x - a_2)^{n_2}(x - a_3)^{n_3} \dots (x - a_k)^{n_k}$?

4. How would you solve an inequality of the type
 $a(x - a_1)^{n_1}(x - a_2)^{n_2}(x - a_3)^{n_3} \dots (x - a_k)^{n_k} > 0$

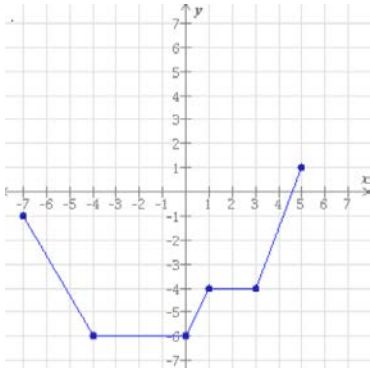
Or

$$a(x - a_1)^{n_1}(x - a_2)^{n_2}(x - a_3)^{n_3} \dots (x - a_k)^{n_k} < 0$$

5. What significance of the solution to the inequalities in question 9 have to the graph of the polynomial function
 $f(x) = a(x - a_1)^{n_1}(x - a_2)^{n_2}(x - a_3)^{n_3} \dots (x - a_k)^{n_k}$?

5. Determine the interval(s) on which the function is (strictly) increasing, or decreasing, or constant. Write your answer in interval notation. Find the local maximum and minimums if they exist.

A.



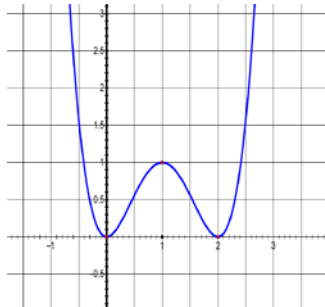
Increasing: _____

Decreasing: _____

Constant: _____

Local Max and Min _____

B.



Increasing: _____

Decreasing: _____

Constant: _____

Local Max and Min _____

6. Match the graphs below with the functions listed here.

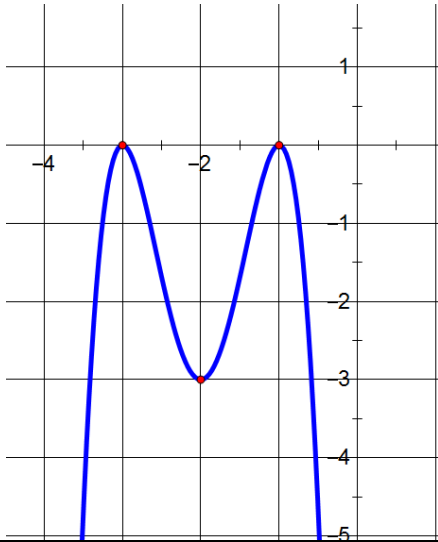
I. $f(x) = -3(x + 1)^2(x + 3)^2$

II. $h(x) = x^2(x - 2)^3(x + 1)$

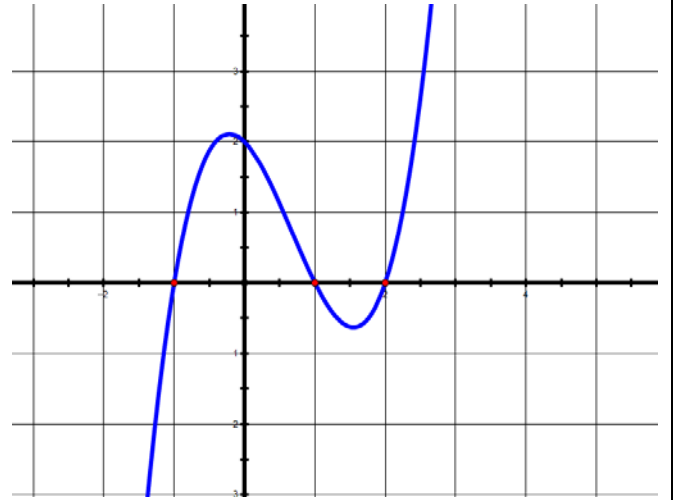
III. $g(x) = \frac{1}{2}(x^3 - x^2 - 6x)$

IV. $r(x) = (x - 1)(x + 1)(x - 2)$

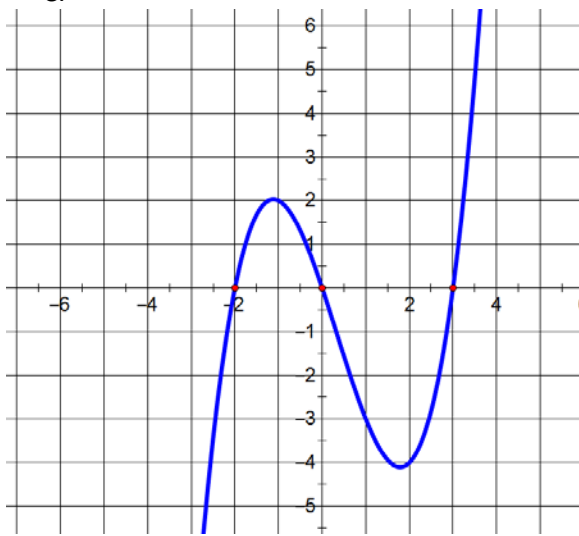
A.



B.



C.



D.

