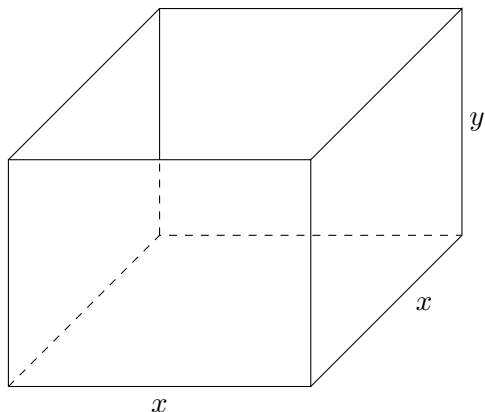


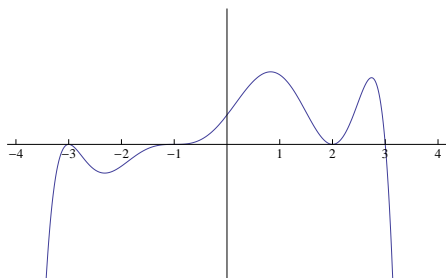
Math 29
PAL Worksheet 9

1. A rectangular box with a square base and no top is to be made from 48 square feet of material. If x represents the length of one edge of the square base, write the volume V of the box as a function of x .

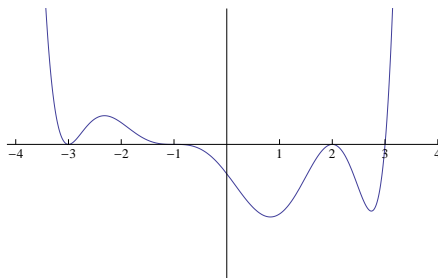


2. One of the following graphs is the graph of $f(x) = -5(x + 3)^2(x + 1)^3(x - 2)^2(x - 3)$. Which is it? Give reasons to support your answer.

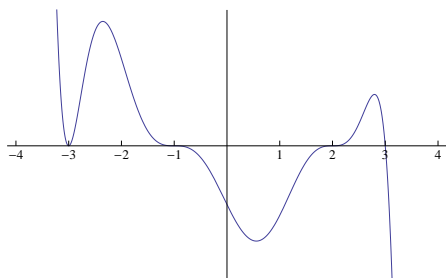
I.



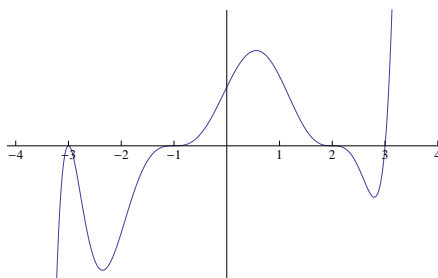
II.



III.



IV.



3. In each case, if possible, find a single polynomial function whose graph has all three of the given characteristics. (You may leave your answer in factored form.) If it is not possible to find such a polynomial, state this fact.

- a.
- Crosses the x -axis at -4 and 3 .
 - Touches, but does not cross, the x -axis at -1 and 2 .
 - Has degree 8 .
- b.
- Crosses the x -axis at -4 and 2 .
 - Touches, but does not cross, the x -axis at -1 .
 - Has degree 6 .
- c.
- Never touches the x -axis.
 - Has y -intercept -8 .
 - Has degree 7 .
- d.
- Crosses the x -axis at -4 , -2 , and 3 , and does not even touch the x -axis anywhere else.
 - Has degree 7 .
 - Whenever $x < -4$, $f(x) > 0$.