

Name: _____

Date: _____

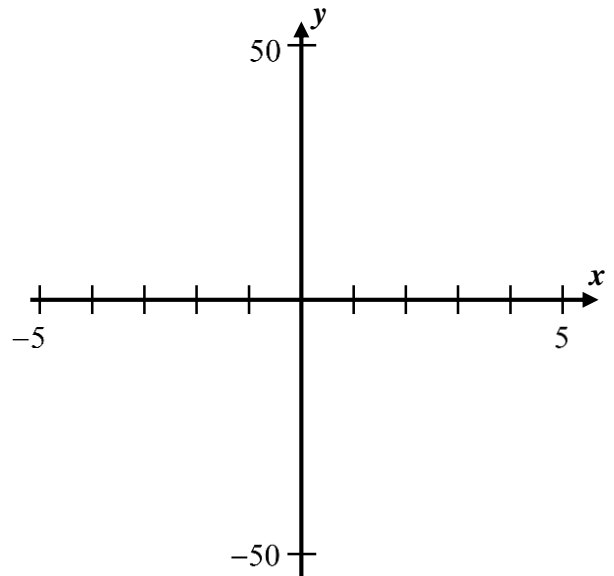
3-3 GRAPHS AND ZEROES OF A POLYNOMIAL

FLUENCY

1. Consider the cubic function $y = x^3 + 2x^2 - 8x$.

(a) Algebraically determine the zeroes of this cubic function.

(b) Sketch the function on the axes given. Clearly plot and label each x -intercept.



2. Consider the cubic function $y = x^3 + 2x^2 - 36x - 72$.

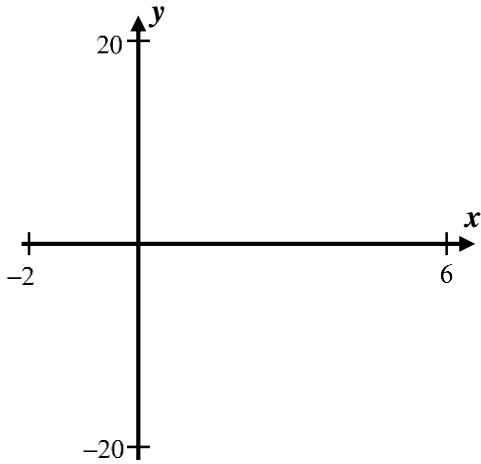
(a) Find an appropriate y -window for the x -window shown on the axes and sketch the graph. Make the sure the window is sufficiently large to show the two turning points and all intercepts. Clearly label all x -intercepts.

(b) What are the solutions to the equation $x^3 + 2x^2 - 36x - 72 = 0$?

(c) Based on your answers to (b), how must the expression $x^3 + 2x^2 - 36x - 72$ factor?

3. Consider the cubic function given by $y = x^3 - 6x^2 + 12x - 5$.

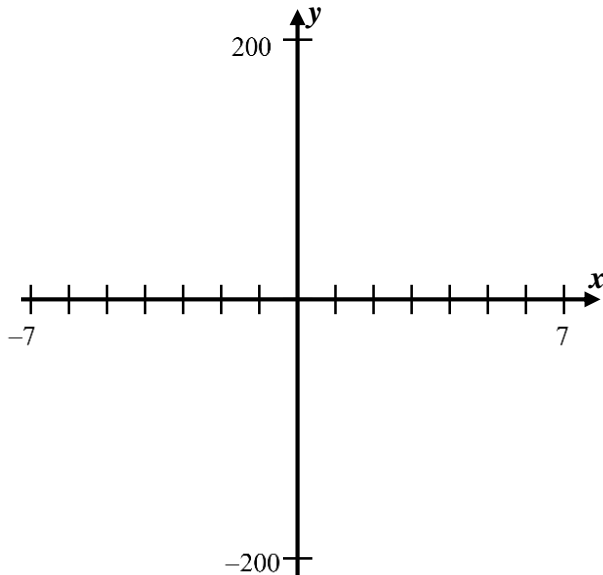
(a) Sketch a graph of this function on the axes given below.



(b) Considering the graphs of cubics you saw in class and those in problems 1 and 2, what is different about the way this cubic's graph looks compared to the others?

4. Consider the quartic function $y = x^4 - x^3 - 27x^2 + 25x + 50$.

(a) Sketch the graph of this function on the axes given below. Clearly mark all x -intercepts.



(b) Use your graph from part (a) to solve the equation $x^4 - x^3 - 27x^2 + 25x + 50 = 0$.

(c) Considering your answer to (b), how does the expression $x^4 - x^3 - 27x^2 + 25x + 50$ factor?

5. In general, how does the number of zeroes (or x -intercepts) relate to the highest power of a polynomial? Be specific. Can you make a statement about the minimum number of zeroes as well as the maximum?