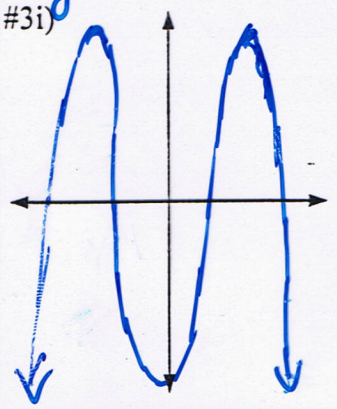
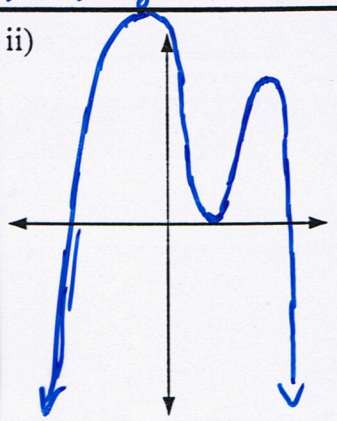
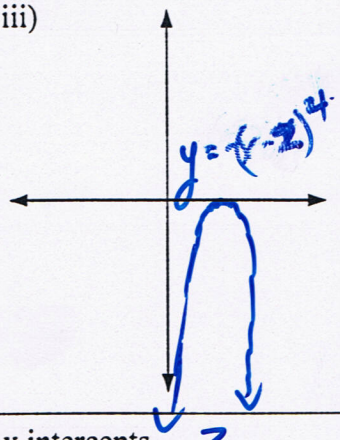
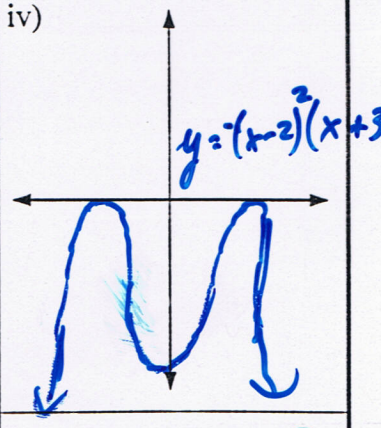
$y = -(x+1)(x-2)(x-4)(x+3)$ $y = -(x-2)^2(x-4)(x+3)$

| #3i) | ii) | iii) | iv) |
|---|---|---|---|
|  |  |   |   |
| x intercepts $-1, 2, 4, -3$ | x intercepts $2, 4, -3$ | x intercepts $2$ | x intercepts $2, -3$ |
| y-intercept $-24$ | y-intercept $48$ | y-intercept $-16$ | y-int $-36$ |

4a) **Reflect:** Describe the effect on the graph of a polynomial function when a factor is repeated:

i) an even number of times

graph does not cross x axis

ii) an odd number of times

graph crosses x-axis.

b) What is the relationship between

i) an even number of repeated factors and the sign of $f(x)$?

at the repeated zero, sign of function does not change

ii) an odd number of repeated factors and the sign of $f(x)$?

at repeated zero sign of function changes