

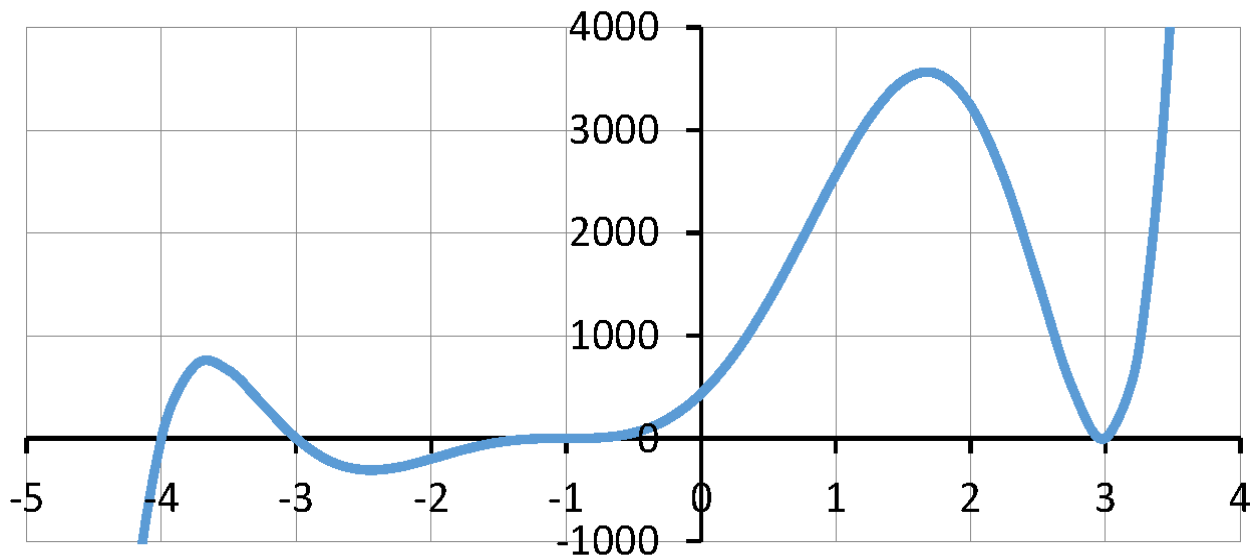
Group #: _____ Name: _____

1. For the following polynomial functions, first factor the polynomial to find the zeros. Then sketch the graph using known monomial behavior and end behavior.

(a) (20 points) $P(x) = x^3 + 2x^2 - 8x$

(b) (20 points) $P(x) = x^4 - 2x^3 + 8x - 16$

2. (20 points) Given the graph of a **degree 7** polynomial function, fill in the blanks. For the column on multiplicity, indicate whether it is (a) even, (b) odd and equal to 1, or (c) odd and greater than 1)



zeros	multiplicity; (a), (b), or (c)
$x =$	$m =$;
$x =$	$m =$;
$x =$	$m =$;
$x =$	$m =$;

The sum of the multiplicities (which is equal to the _____ of the polynomial) is (circle one) even/odd.

3. (20 points) Sketch the graph of the polynomial function $P(x) = -(x-1)^2(x+2)^3$ using behaviors near the zeros, end behaviors, and multiplicity information.
4. (20 points) Sketch the graph of the polynomial function $P(x) = 2x^3(x+1)(x-2)^2$ using behaviors near the zeros, end behaviors, and multiplicity information.