

GRAPHS OF POLYNOMIALS

I. ZEROS & MULTIPLICITY: State the zeros of each polynomial, the multiplicity of each zero, and state whether the graph will cross at the x-axis or bounce at the x-axis.

a) $f(x) = (x - 3)^2(x + 4)$

b) $f(x) = x(x + 5)(x - 2)$

c) $f(x) = x^2(x - 7)^3(x + 1)^2$

II. FINDING ZEROS BY FACTORING: Find the zeros of each polynomial by factoring. List the multiplicity of each zero. Remember to factor the GCF first, then set every factor equal to zero and solve for "x".

a. $x^3 - 2x^2 - 15x$ GCF: _____

b. $4x^3 + 8x^2 - 12x$ GCF: _____

Zeros & Multiplicities:

Zeros & Multiplicities:

c. $-2x^4 + 10x^3 + 12x^2$ GCF: _____

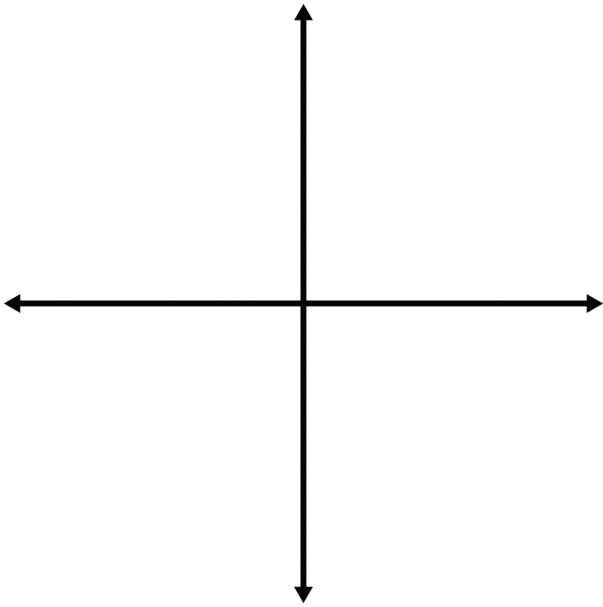
d. $3x^3 + 18x^2 + 27x$ GCF: _____

Zeros & Multiplicities:

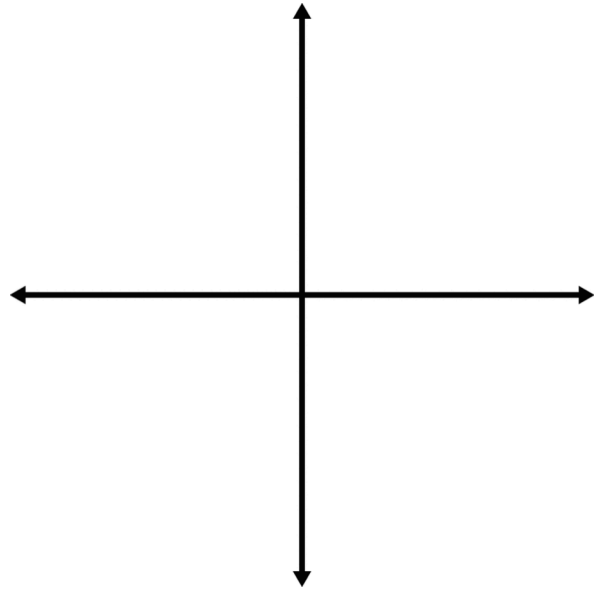
Zeros & Multiplicities:

III. GRAPHING POLYNOMIALS. Graph the polynomials from section II. Use the zeros, multiplicities, and end behavior properties to help sketch the graphs.

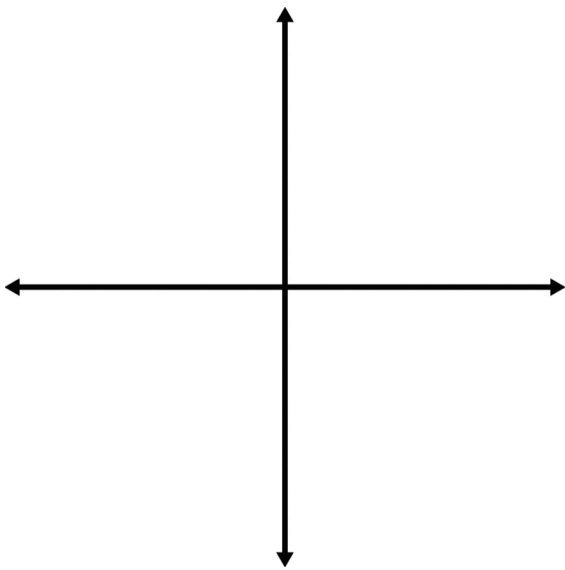
a)



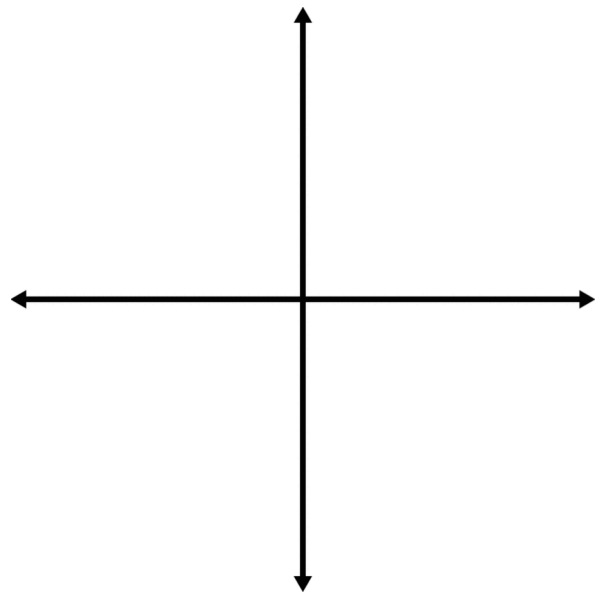
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c)



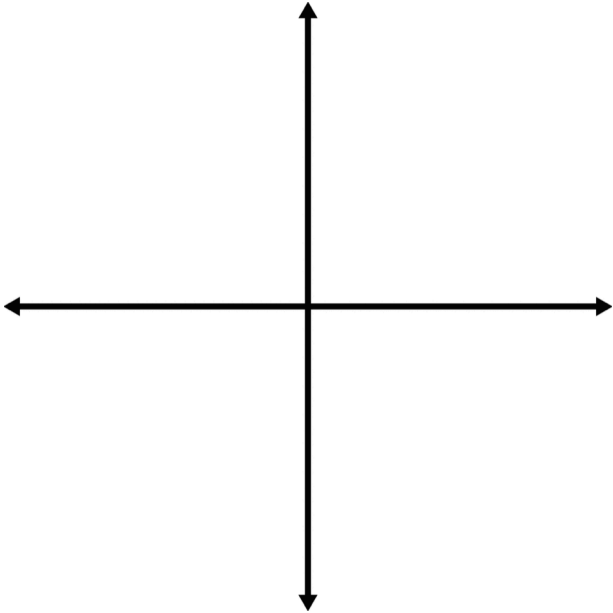
d)



IV. MORE PRACTICE.

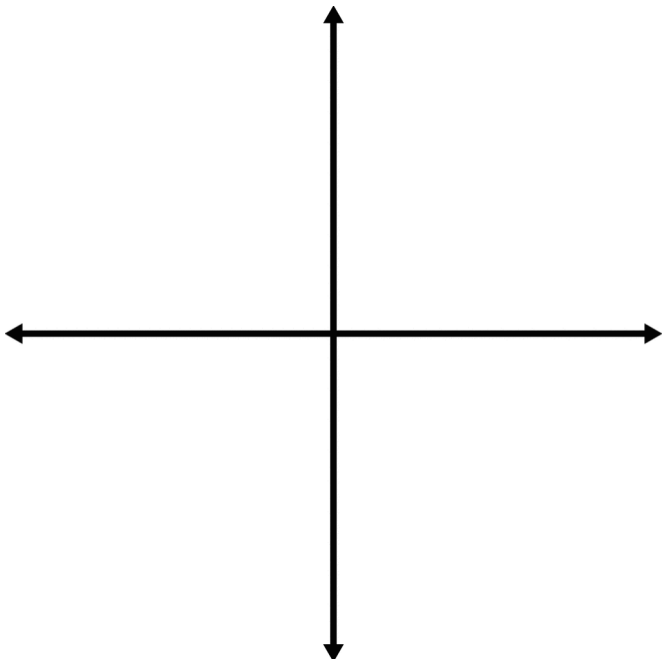
a) Without a calculator, sketch a graph of the function $f(x) = (x + 2)^2 (x - 2) (x - 3)$.

Identify: ZEROS _____, DEGREE _____, LEAD COEFFICIENT _____, END BEHAVIOR _____,
Y-INTERCEPT _____



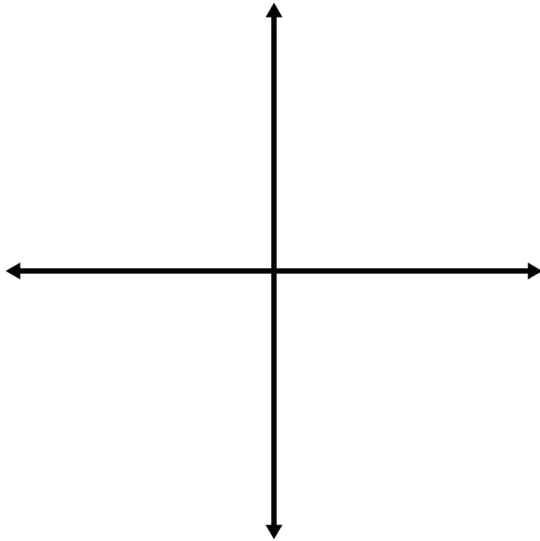
b) Without a calculator, sketch a graph of the function $f(x) = -2x^2 (x + 4) (x - 1)^3$

Identify: ZEROS _____, DEGREE _____, LEAD COEFFICIENT _____, END BEHAVIOR _____,
Y-INTERCEPT _____

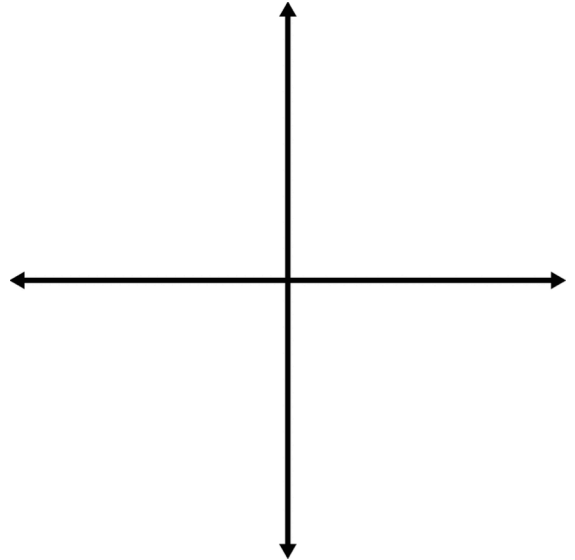


c) Find the zeros of the functions. State the multiplicity of all zeros. Sketch a graph of the function using key features (zeros, y -intercept, end behavior) and multiplicity rules.

1. $f(x) = x(x - 8)^2$



2. $f(x) = (2x + 5)(x - 3)^3$



3. $f(x) = x^4 - 8x^3 + 16x^2$

