Graph Factored Polynomials: Intercepts, Multiplicity, and End Behavior

Factored-polynomial analysis worksheet / 1 of 2

Numerical values are hypothetical examples chosen for easy arithmetic.

Exercise 1: f(x) = (x - 3)(x + 1)^2 — roots with multiplicities	
Exercise 1: end behavior (x -> -inf and x -> +inf)	
Exercise 1: y-intercept	
Exercise 2: g(x) = -2(x - 1)^3(x + 4) — degree	
Exercise 2: leading coefficient	
Exercise 2: end behavior	
Exercise 2: behavior at each intercept	

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Factored-polynomial analysis worksheet / 2 of 2

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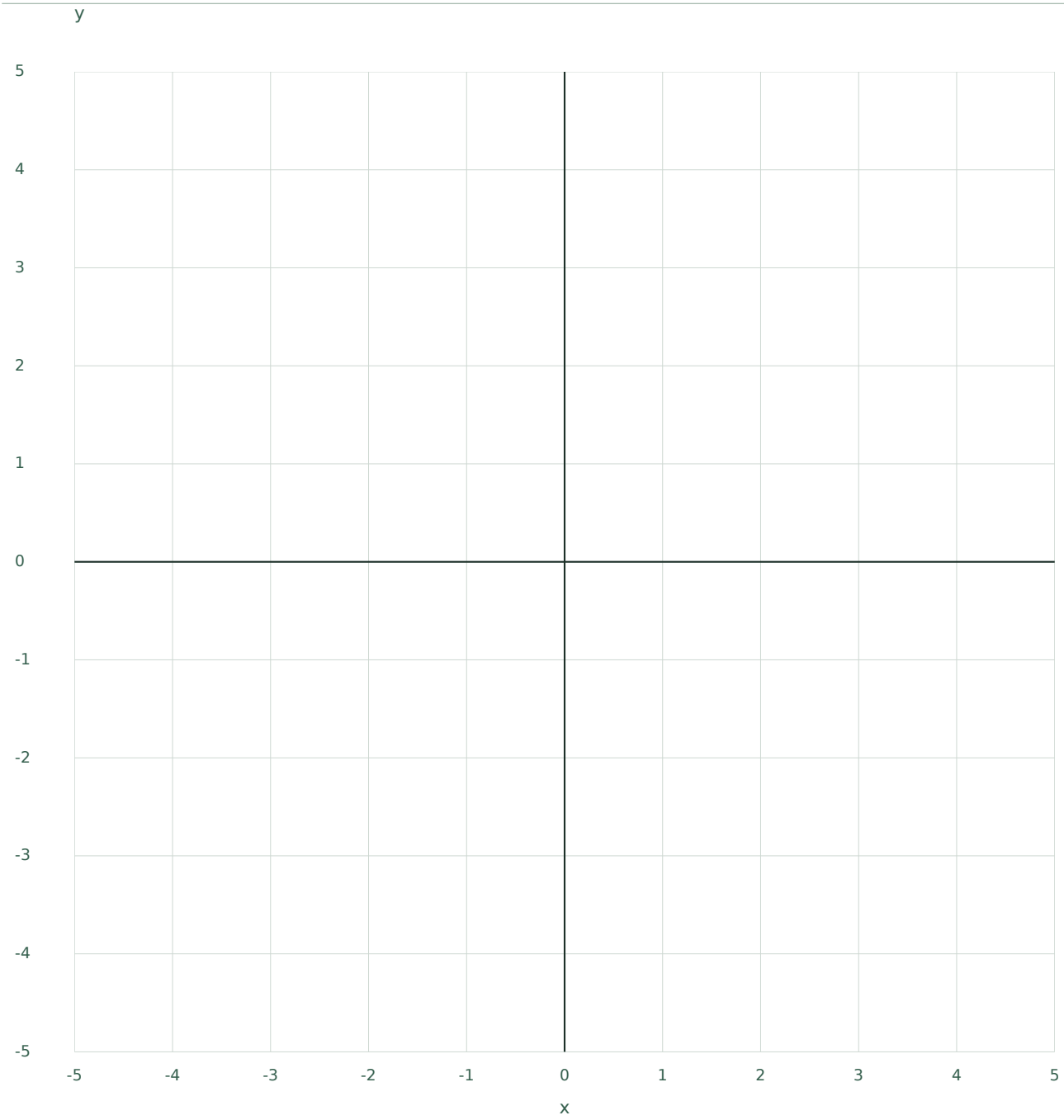
Exercise 3: h(x) = (x + 3)(x - 2)^2 — sign on x < -3	

Exercise 3: sign on -3 < x < 2	

Exercise 3: sign on x > 2	

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Blank coordinate grids for worksheet sketches



Blank grid for qualitative sketch; hypothetical unit steps of 1.

Graph Factored Polynomials: Intercepts, Multiplicity, and End Behavior

Original tasks 1, 2, 3 / blank responses

Task 1

For f(x) = (x - 3)(x + 1)^2, list roots with multiplicities, state end behavior, and find the y-intercept.

Task 2

For g(x) = -2(x - 1)^3(x + 4), state degree, leading coefficient, end behavior, and the behavior at each intercept.

Task 3

Build a sign table for h(x) = (x + 3)(x - 2)^2 and state whether the graph is above or below the axis on each interval.

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Original tasks 4 / blank responses

Task 4

Sketch k(x) = (x - 1)^2(x + 2)^2. Describe roots, multiplicities, end behavior, y-intercept, and interval signs without drawing an image.