

EXAM 3 OBJECTIVES - MATH 101

The students should be able to:

1. Use the standard form $f(x) = a(x - h)^2 + k$ of a quadratic function to sketch the graph by transformations.
2. Use the vertex, axis of symmetry, and intercepts to graph a quadratic function.
3. Find the maximum or minimum of a quadratic application algebraically.
4. Find a quadratic function given the vertex and one additional point on the graph.
5. Solve applications involving quadratic functions.
6. Identify the zeros and multiplicity of a polynomial function.
7. Analyze the graph of a polynomial function.
8. Find a polynomial function, given some zeros and their multiplicities. [Write in expanded form.]
9. Find the intercepts and asymptotes (vertical, horizontal, and oblique) for a given rational function.
10. Analyze a rational function and use the information to make a careful hand drawn sketch.
11. Determine if the graph of a rational function has any holes or intersects a horizontal or oblique asymptote.
12. Use synthetic division with polynomials with the divisor in the form $(x - r)$.
13. Use long division with polynomials.
14. Identify the potential rational zeros of a polynomial function.
15. Understand and use the remainder, factor, and rational zeros theorems.
16. Determine if a given binomial is a factor of a given polynomial.
17. Find all the real and complex zeros for a polynomial function.
18. Write a polynomial function in a specified factored form (e.g. over the real numbers with integer coefficients, with linear factors, etc.)