

Objectives Assessed by MA 153 Test 3
Chapter 5 (not 5.4), 8.1, and Chapter 9 (not 9.5, 9.6)
(See also your *eGrade* assignments for more practice.)

1. Understand vertical and horizontal shifts of a function as an outside/inside *additive* change to the function rule.
Section **5.1** #3-25, 31-32, 35, 39, 40 and **Chapter 5 Review** #1-4, 19, 20, 23, 24, 30, 31, 35ad
2. Understand vertical or horizontal reflections of a function as an outside/inside change to the function rule *by a negative sign*.
Be able to combine these with shift transformations.
Section **5.2** #2-17, 22, 23, 26, 27 and **Chapter 5 Review** #1-4, 19, 21, 22, 27, 28, 29, 31
3. Identify whether a function is odd, even, or neither by looking at its graph, equation or table.
Section **5.2** #18-21, 30, 32, 33, 40 and **Chapter 9 Review** 23abcdefg and 25
4. If given that a function is odd or even and a point on its graph, determine another point.
Section 5.2 #28, 29 and **Chapter 5 Review** #5-11
5. Understand vertical stretch or compression of a function as an outside *multiplicative* change to the function rule.
Be able to combine these with reflections and shift transformations.
Section 5.3 #31-16, 20, 21-24, 28 and **Chapter 5 Review** #1-4, 19, 25, 35e, 36
6. Understand the standard form, vertex form, and factored form of a parabola. Convert from standard form to vertex form by completing the square or using a grapher and a shift transformation. **Section 5.5** # 10-13, 15, 16, 18, 19
7. Find the vertex, axis of symmetry, concavity, whether the graph is narrower, wider, or same shape as $y = x^2$, and intercepts if given its equation. Be able to sketch without a graphing calculator.
Section 5.5 #9-18, 20, 21, 25, 28 and **Chapter 5 Review** # 48
8. Find a quadratic model if given its zeros or its vertex and at least one other point.
Section 5.5 #3-8, 14 and **Chapter 5 Review** #13-16
9. Determine the composition $f(g(x))$. Simplify if necessary.
Section 8.1 #5, 7, 8, 11, 12, 13, 17-20, **Chapter 8 Review** #1-4, 7h, 16
10. Know the six basic shapes of power functions (pages 378-379) and their equations. Know when they are flipped.
Section **9.1** #7-10, 22-24 and Section **9.2** # 27, 28, 29 and **Chapter 9 Review** 1-2
11. Find the formula for a power function $f(x) = kx^p$ if given that it passes through two points $(a, f(a))$ and $(b, f(b))$, where $a = 1$.
Section 9.1 #11-13, 18 and **Chapter 9 Review** 3
12. Find the formula for a power function $f(x) = kx^p$ if given that it passes through two points $(a, f(a))$ and $(b, f(b))$, where $a \neq 1$.
Section 9.1 #19-21 and **Chapter 9 Review** 4
13. Identify the degree, leading term, leading coefficient, and long-run behavior of a polynomial if given in expanded or factored form.
Section 9.2 #1-6, 9-12, 13 and **Chapter 9 Review** 5-8
14. Determine the zeros of a polynomial if given its equation in expanded or factored form. If necessary, use a graphing calculator or try to factor.
Section 9.2 #7 and Section **9.3** #4-10, 34-39, 43-44 and **Chapter 9 Review** 9-10
15. Use a graphing calculator to find maximum or minimum values of a function as well as intersections.
Section 9.2 #8, 18, 21
16. Use the graph and the expanded form of a polynomial function to find its factored form.
Section **9.3** #1-3 and **Chapter 9 Review** 9
17. Understand the (short-run) behavior of a polynomial function near its zeros. See **Example 3** and the box on page 392.
Section **9.3** #9-11, 26, 46
18. Find the formula for a polynomial from its graph.
Section **9.3** #12-24, 27-32, 45 and **Chapter 9 Review** 17-20, 22, 35
19. Describe the long run behavior of a rational function. Report horizontal asymptotes, if they exist.
Section **9.4** #7-12

Start your review by doing the following:

Check Your Understanding Chapter 5 (page 225): 1-21, 24-29

Check Your Understanding Chapter 9 (page 428): 1-43