

**Math 1050 2nd Quarter Terms and Review Problems****Things to know**

1. **Library Functions** on page 263 except Greatest integer function.

**Even Function:**  $f(-x) = f(x)$ ; symmetric about the y-axis

**Odd Function:**  $f(-x) = -f(x)$ ; symmetric about the origin

**Increasing, Decreasing and Constant:** Open intervals, x-values

**Local Maximum and Local Minimum**

**Absolute Maximum and Absolute Minimum** (both do not always exist)

**Transformations:** Reflections, Stretches/Compressions, Shifts

**Average Rate of Change:**  $\frac{\Delta y}{\Delta x} = \frac{f(b) - f(a)}{b - a}$

**Linear Function:**  $f(x) = mx + b$ ; Average rate of change = m

**Quadratic Function:**  $f(x) = ax^2 + bx + c$

If  $a > 0$ , opens up; if  $a < 0$ , opens down

**Vertex:**  $\left( \frac{-b}{2a}, f\left(\frac{-b}{2a}\right) \right)$ ; **Axis of Symmetry:**  $x = -\frac{b}{2a}$

**y-intercepts:** Let  $x = 0$ ; **x-intercepts** (real zeros): let  $y = 0$ .

**Power function:**  $x^n$ , when n is even, same end behavior; when n is odd, opposite end behavior

**Polynomial Function:** Example:  $f(x) = 4(x - 2)^2(x + 4)$ ; degree = 5

**Maximum number of turning points:** degree - 1

**End behavior:**  $y = 4x^3$  (from example above)

**Real Zeros:** Solve  $f(x) = 0$ .

**Multiplicity:** Even, touches; Odd, crosses

**Behavior Near each real zero**

**Rational Functions:**  $R(x) = \frac{p(x)}{q(x)}$ ; Domain:  $\{x | q(x) \neq 0\}$

**Vertical Asymptotes:** With  $R(x)$  in lowest terms, solve  $q(x) = 0$ .

**Multiplicity:** Even, same behavior; Odd, opposite behavior

**Horizontal or Oblique Asymptotes:** See Page 350 in textbook.

**Review Problems**

2. Chapter 3 Review Page 266: 25 f, 26gh, 28, 29, 30, 31, 45, 47, 48, 57, 65, 67, 69

3.6 Page 260: 7, 19

Chapter 4 Review Page 314: 3, 5, 7, 8, 9, 14, 19, 23, 25, 27, 35, 36

Chapter 5 Review Page 394: 6, 9, 11, 13, 20, 22, 23, 26