You should be able to answer questions dealing with these concepts. Study the practice problems, guided examples, WeBWorK, and examples worked in the textbook, as well as the practice test.

- Linear Functions $f(x) = mx + b$
- Quadratic Functions $f(x) = ax^2 + bx + c$
  - completing the square
  - vertex form $f(x) = a(x - h)^2 + k$
  - vertex and axis of symmetry
  - x-intercepts
  - average rate of change
- Power Functions $f(x) = kx^a, a \in \mathbb{R}, a \neq 0$
  - square root function
- Monomial Functions $f(x) = kx^n, n = 0, 1, 2, 3, \ldots$
  - end behaviour for n even, n odd
  - sketching monomials
  - reciprocal function
- Polynomials
  - terminology: term, coefficients, leading term
  - local extrema
  - end behaviour: $\lim_{x \to \infty} f(x)$ and $\lim_{x \to -\infty} f(x)$
  - zeros of polynomials, multiplicity, crossing x-axis
- Zeros of Polynomials
  - long division algorithm for polynomials
  - remainder theorem
  - factor theorem
  - rational zero theorem
- Sketching Polynomials
  - Examine end behaviour (horizontal asymptotes, slant asymptotes), Find any x-intercepts (factor the polynomial if possible), Find the y-intercept, which is $f(0)$ (it might be a point of interest).
- Sketching Rational Functions of the form $f(x) = \dfrac{ax + b}{cx + d}$
  - find how f is transformed from the reciprocal function $y = 1/x$
- Sketching a General Rational Function
  - Examine end behaviour (horizontal asymptotes, slant asymptotes), Look for vertical asymptotes (factor the denominator if possible), Find any x-intercepts (factor the numerator if possible), Find the y-intercept, which is $f(0)$ (it might be a point of interest).
- Solving Equalities
  - solving polynomial equations $f(x) = 0$
  - solving rational equations $f(x)/g(x) = 0$
    * lowest common denominator
    * extraneous solutions
    * indeterminant forms ($\frac{0}{0}$ is an indeterminant form, you need to do some work to determine what it is)
- Solving Inequalities
  - sign chart
  - polynomial inequalities
  - rational inequalities
  - radical inequalities, absolute value inequalities