

Arithmetic → Algebra → Functions → Functions 2.0  
 $1+2=3$        $3x+7x=20$        $y = 5x^2 + 3$        $\log(x) + \sin(\theta)$

"Most people overestimate what they can do in 1 week and underestimate what they can achieve in 1-year" (Bill Gates)

**Arithmetic**  
 $1+2=3$

**Algebra**  
 $3x+7x=20$

**Functions**  
 $y = 5x^2 + 3$

**Functions 2.0**  
 $\log(x) + \sin(\theta)$

Real Numbers  
 Algebra

Equations

Review from Algebra-I

Relations, Functions, Graphs  
 Domain, Range, 1-1 function, lines

$y = mx + b$

System of equations  
 Graphs of two lines

**Tools**

**Polynomials**  
 Factoring

$(x^2 + 3x) + (2x + 5)$   
 $x^2 + 5x + 6$

**Powers, Roots, Complex Numbers**

Quadratic equations  
 Solving: Factoring, complete square, formula

Quadratic graphs: Parabola

**Functions transformations**

**Rational expressions**  
 Division

$\frac{x^3 + 3x^2 + 4}{x + 5}$

**Polynomial functions**  
 Graphs, behavior, roots

**Exponents, Logarithms**  
 New functions: Graphs, manipulations

$e^x + 2 \log(x^2 + 5)$

**Trigonometric functions**  
 Geometry meets algebra (again!)

$2 \cdot \sin(\theta) \cdot \cos(\theta)$

**Sequences and Series**  
 Arithmetic, Geometric