

International Baccalaureate  
**MATHEMATICS**  
Analysis and Approaches (SL and HL)

Promathematics.com

Lecture Notes

**TOPIC 2**  
**FUNCTIONS**

2.1 LINES (or LINEAR FUNCTIONS) .....	1
2.2 QUADRATICS (or QUADRATIC FUNCTIONS) .....	7
2.3 FUNCTIONS, DOMAIN, RANGE, GRAPH .....	16
2.4 COMPOSITION OF FUNCTIONS: $f \circ g$ .....	30
2.5 THE INVERSE FUNCTION: $f^{-1}$ .....	35
2.6 TRANSFORMATIONS OF FUNCTIONS .....	44
2.7 ASYMPTOTES .....	52
2.8 EXPONENTS - THE EXPONENTIAL FUNCTION $a^x$ .....	57
2.9 LOGARITHMS - THE LOGARITHMIC FUNCTION $y = \log_a x$ .....	64
2.10 EXPONENTIAL EQUATIONS .....	75

**Only for HL**

2.11 POLYNOMIAL FUNCTIONS .....	85
2.12 SUM AND PRODUCT OF ROOTS .....	94
2.13 RATIONAL FUNCTIONS – PARTIAL FRACTIONS .....	98
2.14 POLYNOMIAL AND RATIONAL INEQUALITIES .....	104
2.15 MODULUS EQUATIONS AND INEQUALITIES .....	108
2.16 SYMMETRIES OF $f(x)$ - MORE TRANSFORMATIONS .....	112