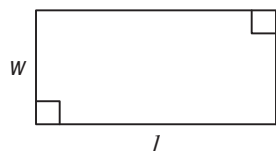


## ALGEBRA II FORMULA SHEET

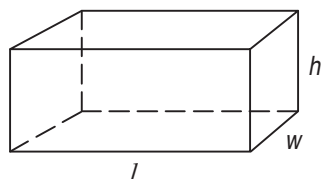
Formulas that you may need to solve questions on this exam are found below.

You may use calculator  $\pi$  or the number 3.14.

## Shapes



$$A = lw$$



$$V = lwh$$

## Data Analysis

**Permutation:**  ${}_n P_r = \frac{n!}{(n-r)!}$

**Combination:**  ${}_n C_r = \frac{n!}{r!(n-r)!}$

## Exponential Properties

$$a^m \cdot a^n = a^{m+n} \qquad (a^m)^n = a^{m \cdot n}$$

$$\frac{a^m}{a^n} = a^{m-n} \qquad a^{-1} = \frac{1}{a}$$

## Powers of the Imaginary Unit

$$i = \sqrt{-1} \qquad i^2 = -1$$

$$i^3 = -i \qquad i^4 = 1$$

## Logarithmic Properties

$$\log_a x = y \leftrightarrow x = a^y \qquad \log x = y \leftrightarrow x = 10^y \qquad \ln x = y \leftrightarrow x = e^y$$

$$\log_a (x \cdot y) = \log_a x + \log_a y$$

$$\log_a x^p = p \cdot \log_a x$$

$$\log_a \frac{x}{y} = \log_a x - \log_a y$$

## Quadratic Functions

**General Formula:**  $f(x) = ax^2 + bx + c$

**Standard (Vertex) Form:**  $f(x) = a(x - h)^2 + k$

**Factored Form:**  $f(x) = a(x - x_1)(x - x_2)$

**Quadratic Formula:**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

when  $ax^2 + bx + c = 0$  and  $a \neq 0$

## Compound Interest Equations

**Annual:**  $A = P(1 + r)^t$   $A$  = account total after  $t$  years

**Periodic:**  $A = P \left( 1 + \frac{r}{n} \right)^{nt}$   $P$  = principal amount  
 $r$  = annual rate of interest

$t$  = time (years)

**Continuous:**  $A = Pe^{rt}$   $n$  = number of periods interest is compounded per year