

ASSUMED SKILLS FOR AP CALCULUS (AB/BC)

While this by no means is a completely comprehensive list, it is pretty thorough.

GC SKILLS:

Graphing functions – all kinds... including appropriate use of parentheses, radical functions, rational functions, polynomials
Setting an appropriate Window
Use of Zoom In/Out, use of Zoom Box (?)
Root/Zero Finder
Intersection
Max/Min
Evaluating functions for given values of x – use of Table, Value, Y-function

ALGEBRAIC SKILLS:

MANIPULATION:

- Simplifying expressions ALL sorts. For example: $(x+2)^2 \neq x^2 + 4$ and $\frac{1}{x} + \frac{x+2}{3} = ?$
- Factoring, factoring, and more factoring! Includes Sum and Difference of Two Cubes.
- Solving an equation for y , as done with Inverse functions [For example: find the inverse of $y = 5 \cdot \sqrt[3]{x+2} - 3$]
- Radicals to Rational exponents, and vice versa [For example: $\sqrt[3]{x+1} = (x+1)^{1/3}$, $8^{2/3} = ?$]
- Working with the Laws of Exponents and negative exponents [For example: $\frac{1}{\sqrt{x+1}} = (x+1)^{-1/2}$]
- Simplifying radicals – breaking them down [For example: $\sqrt{12} = 2\sqrt{3}$]
- Simplifying Complex fractions [For example: $5 + \frac{2}{3x}$ simplifies to what?]
- Working with the Laws of Logarithms

FUNCTIONS:

- Familiarity with the basic, “parent” graphs – linear, quadratic, cubic, square root, cube root, absolute value, exponential, logarithmic, trigonometric (sine, cosine, and tangent)
- Graphing a linear function by hand [For example: graph $y = -2x - 4$]
- Writing an equation of a linear function (for instance when given two points that lie on the line)
- Factoring and solving Quadratic Equations
- Use of the Quadratic Formula (on GC program is ok) to solve a quadratic equation
- Finding the Domain of a function given graphically
- Algebraically finding the Domain of polynomial, Rational, Radical functions (including solving quadratic inequalities)
- How to find the location of asymptotes and holes in Rational graphs (asymptotes are where the denominator equals 0; holes are located where there is a common factor between the numerator and denominator)

- Use of interval notation
- Composition of functions
- Graph analysis – zeros, Domain, Range, location of asymptotes, intervals were increasing or decreasing, location of minimum or maximum points
- The basic concept of a limit

TRIGONOMETRY:

- Right Triangle Trigonometry (SOH CAH TOA)
- Radian measures (in terms of π) of the important angles – 30° , 45° , 60° , and quadrantal angles
- Unit Circle ordered pairs ☺
- Evaluating trig expressions that arise from the Unit Circle
- The Pythagorean Identities and other Trig Identities, including the Double-Angle Identities
- Evaluating inverse trigonometric expressions
- Solving trigonometric equations on the interval $[0, 2\pi)$

GEOMETRY:

- Area of a rectangle, square, circle, triangle
- Surface Area of a rectangular solid
- Volume of a rectangular solid, of a cylinder
- Perimeter of a region / Circumference of a circle
- Use of the Pythagorean Theorem

ASSUMED SKILLS SPECIFICALLY FOR AP CALCULUS (BC)

SERIES:

- How to expand a series and find its sum

THE POLAR COORDINATE SYSTEM:

- Expressing a rectangular point in polar form
- Expressing a polar point in rectangular form
- Expressing a rectangular equation in polar form
- Expressing a polar equation in rectangular form

PARAMETRIC EQUATIONS:

- Graphing a parametrically defined equation by creating a table of values