Advice on student self-placement into mathematics courses

During first-year student orientation this fall there will be a "Math GE Fulfillment Exam" that can be used by students to fulfill the Math GE requirement and/or place out of certain major/minor math requirements; at the same time, it will provide a suggestion regarding what math course you might take next. However, the exam is not needed to enroll in a course: students are allowed "self-place" based on their high school preparation.

If you are wondering what math course to take next, the following rough guidelines may be helpful.

If you have	**then you should take**
not taken precalculus yet	Math 023: Transcendental Functions (Precalculus)
taken precalculus, but no calculus	Math 030: Calculus I
taken Calculus AB	Math 031: Calculus II
taken Calculus BC	Math 032: Calculus III or Math 060: Linear Algebra*

*Note that Math 060 acts as a transition course from more calculational to more theoretical mathematics in the Claremont curriculum. The Computer Science major at Harvey Mudd requires Math 060; such students occasionally prefer to take Math 060 directly (i.e., without taking Math 032).

We have also provided a list (on the next page) of topics covered in each course to give more precise guidance on self-placement. Note that not all professors cover all topics listed: the more fundamental topics are italicized. If (and only if) you have already seen most of the topics, and *all of the italicized topics*, you should feel confident taking the next course.

Math Self-placement Guidelines: Course Topics

Math 023: Transcendental Functions	Math 030: Calculus I	Math 031: Calculus II
absolute value; distance	*absolute value*	*antiderivatives*
solving equations; extraneous solutions	*distance formula*	*Fundamental Theorem of Calculus I and II; Mean Value Theorem for integrals*
Zero Product Property	lines; perpendicular lines	*substitution for indefinite and definite integrals*
distance in the plane	vertical line test	*integration by parts*
midpoint formula	*radian measure*	trigonometric substitutions
graphs of equations	basic trigonometric identities	partial fraction decomposition
lines: slope-intercept, point-slope, general form	*limits; uniqueness of the limit*	numerical integration; bounding error
parallel lines, perpendicular lines	*continuity*	*comparison test for improper integrals*
circles	Intermediate Value Theorem	"disk-washer" formula for volume of a solid of revolution
techniques for solving equations	limits and sequences	method of cylindrical shells
inequalities	Monotonic Convergence Theorem	applications to economics and physics
where is a polynomial positive or negative	*differentiation*	arc length formulas
functions; domain, range, image; equations determining functions	*Power rule*	surface area of a surface of revolution
graphs of functions; vertical line test; piecewise-defined functions.	*differentiability and continuity*	method of integrating factors
maximum value; increasing functions; average rate of change of a function	*product rule; quotient rule*	*limits of sequences; squeeze theorem*
translations, dilations, reflections, and symmetry	*chain rule*	Monotonic Sequence theorem
composition of functions	*related rates*	*geometric series; divergence test (n-th term test)*
inverse functions; horizontal line test; *one-to-one functions*	*differentiation of inverse functions*	*integral test, basic comparison test, limit comparison test; root test; ratio test*
linear functions	*higher derivatives*	*absolute convergence test; alternating series (Leibniz's) test*
quadratic functions; vertex, axis of symmetry, extreme values	*Mean Value Theorem*	*power series*
graphing polynomials	Implicit differentiation	*Taylor series;* Lagrange remainder formula
rational functions: domain, intercepts, determining asymptotes; graphing	"Fermat's Theorem"	*Taylor's theorem*
exponential functions	*First derivative test*	Differential equations: separation of variables, oscillations
logarithmic functions	Second derivative test; classification of extrema	
properties of logarithms	*L'Hopital's rule*	
logarithmic and exponential equations and inequalities	Newton's method	
exponential growth and decay	*antidifferentiation*	
radian measure; arclength formula; sector angle formula	*substitution*	
trigonometric functions; trigonometric identities	*antiderivative*; *indefinite integral*	
common values of cosine, sine, tangent	summation notation; right endpoint approximation	
addition and difference formulas	Riemann sums; *integrable functions*; *definite integral*	
double-angle and half-angle formulas	*Fundamental Theorems of Calculus*	
inverse trigonometric functions		
Law of Sines		
Law of Cosines		