**AP Calculus AB Examination**

**Free Response Topic Frequency**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 |
| **Functions** |  |
| Finite limits |  |  |  | X | X |  |  |  |  |  |
| Infinite limits |  |  |  |  |  |  |  | X |  | X |
| Definition of the derivative |  | X |  |  |  | X |  |  |  |  |
| Analyze a function in tabular form | X |  | X |  |  |  | X | X |  |  |
| Tangent line equation | X | X | X | X | X | X |  | X |  | X |
| Chain Rule | X | X |  |  |  |  |  |  | X |  |
| Increasing/decreasing behavior | X |  | X | X | X | X | X | X | X |  |
| Critical values |  |  | X | X | X | X | X | X | X | X |
| Concavity | X | X | X | X | X |  | X |  |  |  |
| Inflection points | X |  |  | X | X |  | X | X | X |  |
| Average rate of change | X | X | X | X | X | X |  |  |  |  |
| Extreme values and Intermediate Value Theorem | X | X | X | X | X | X | X |  |   |   |
| Higher order derivatives | X | X |  |  | X |  |  |  | X | X |
| Optimization problems |  | X | X |  |  |  |  | X | X | X |
| Curve analysis from the derivative | X | X | X |  |  |  | X |  |  |  |
| Mean Value Theorem |  | X |  |  | X |  |  | X |  |  |
| Implicit derivatives | X |  |  | X | X |  |  |  |  |  |
| Linear Approximation |  | X |  |   | X |  |  | X | X |  |
| Related rates | X | X |  |  |  |  |  | X | X |  |
| Particle Motion |  |  | X | X | X |  | X | X | X | X |
| **Integral Calculus** |  |
| Area and/or interpretation | X | X | X | X | X | X | X | X | X | X |
| Numerical approximations using rectangles |  |  | X | X |  | X |  |  | X |  |
| Trapezoidal approximations |  | X |  |  | X | X |  | X |  |  |
| Fundamental Theorem of Calculus |  | X |  | X | X | X |  | X | X | X |
| Average Value |  | X | X | X | X | X |  |  |  |  |
| Volume of a solid of revolution |  | X | X |  | X | X |  |  | X | X |
| Volume of a solid with known cross section | X | X | X | X |  | X | X | X | X |  |
| Separable differential equations |  | X | X | X | X | X |  | X |  | X |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Integral Calculus** | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 |
| Slope Fields | X | X |  |  |  |  |  | X |  | X |
| Particle motion from graphs and tables | X |  |  |  |  |  | X | X |  | X |
| Particle motion from equations | X |  | X | X | X |  | X |  | X | X |
| Definite integral as an accumulator | X | X | X |  | X | X | X | X | X | X |
| **Calculator Skills** |  |
| Roots or intersection points |  |  |  | X |  |  |  |  |  | X |
| Evaluation of a definite integral | X |  | X | X |  | X | X | X | X | X |
| Evaluation of a derivative | X | X | X |  |  | X |  | X |  |  |

Note: To view past Free Response questions by topic and year go to www.skylit.com/calculus