Calculus I
Review Topics for Final Exam

November 23, 2006

• Transformations of functions and graphs
  Page 84 Number 11–16

• Inverse functions
  Page 85 Number 24

• Parametric equations; parametrization of function graphs, lines, circles, ellipses
  Page 85 Number 32

• Limits: Find one sided or two sided limits, limits at $\infty$.
  Page 176 Number 3–16

• Squeeze Theorem
  Page 116 Number 29, 30

• Continuity
  Page 127 Number 32

• Definition of derivative and differentiability: Calculate derivatives from the limit definition
  Page 154 Number 35, 36; Page 167 Number 31–39

• Estimating derivatives numerically
  Page 178 Number 39

• Position, velocity, acceleration
  Page 173 Number 8; Page 210 Number 3, 4; Page 256 Number 65; Page 210 Number 7, 8

• Tangent line: Find the tangent line at a given point to a curve
  Page 256 Number 39, 40

• Derivative formulas, including implicit differentiation and logarithmic differentiation.
  Page 255 Number 1–34, 39–42
• Linear approximation and differentials.
  Page 257 Number 71, 72

• Related rates.
  Page 336 Number 33–35

• Graphing using the first and second derivatives.
  Page 336 Number 5–12

• Local and global extrema; the First and Second Derivative tests.
  Page 287 Number 15, 16

• Applied optimization problems.
  Page 337 Number 38, 40, 44

• Limits using L’Hospital’s Rule.
  Page 336 Number 25–32

• Newton’s Method.
  Page 337 Number 48

• Antiderivatives / indefinite integrals
  Page 332 number 15–20, 41; Page 371 number 41, 42

• Estimating integrals using Riemann sums
  Page 364 number 6, 7, 9

• Evaluating definite integrals by calculating or estimating area
  Page 365 number 31–34

• Evaluating definite integrals using antiderivatives
  Page 374 number 1, 2, 31, 32

• Recover a function from its derivative using the Fundamental Theorem
  Page 375 number 60, 61, 64

• Differentiate $\int_{0}^{x} f(t) \, dt$
  Page 383 number 2, 7, 10, 12

• Integration by substitution
  Page 392 number 39–50

• Integration by parts
  Page 398 number 3, 10, 14, 20

• Integration using partial fractions
  Page 405 number 17, 19

• Integrating powers of sines and cosines
  Page 404 number 1–6