UMass Boston
Department of Mathematics
Math 240/242 - Multivariable and Vector Calculus
Section 2
Spring 2015

# Recommended Practice Problems

From Stewart: Calculus: Concepts and Contexts, 4th Edition, Brooks/Cole
Publishing Co. ISBN13: 978-0495560548, ISBN10: 0495560545

**9.1:** Three-Dimensional Coordinate Systems.
# 5, 9, 11, 13, 19, 31, 35, 39;

**9.2:** Vectors.
# 3, 9, 11, 17, 21, 23, 29, 31, 35, 37;

**9.3:** The Dot Product.
# 1, 3, 7, 9, 11, 17, 21, 25, 27, 31, 35, 37, 39, 43, 45;

**9.4:** The Cross Product.
# 1, 3, 5, 7, 9, 13, 17, 21, 23, 27, 31, 33, 39;

**9.5:** Equations of Lines and Planes.
# 1, 3, 5, 9, 15, 17, 21, 25, 29, 39, 43, 49, 53, 55, 57;

**9.6:** Functions and Surfaces.
# 5, 7, 15, 17, 19, 21, 33;

**9.7:** Cylindrical and Spherical Coordinates.
# 3, 5, 7, 9, 13, 17, 21, 25, 27, 31;

**10.1:** Vector Functions and Space Curves.
# 1, 3, 9, 11, 17, 19, 27, 35, 39, 43;

**10.2:** Derivatives and Integrals of Vector Functions.
# 3, 5, 11, 17, 23, 31, 33, 35;

**10.3:** Arc Length and Curvature.
  # 3, 7, 13, 15, 17, 23, 25, 43, 45;

**10.4:** Motion in Space: Velocity and Acceleration.
  # 5, 9, 13, 23, 35, 39;

**10.5:** Parametric Surfaces.
  # 1, 3, 5, 13, 23, 25;

**11.1:** Functions of Several Variables.
  # 3, 5, 7, 9, 11, 13, 17, 23, 35, 43, 45;

**11.2:** Limits and Continuity.
  # 7, 11, 15, 29, 33, 37;

**11.3:** Partial Derivatives.
  # 3, 5, 9, 21, 25, 27, 39, 45, 49, 55, 59, 65, 69, 71, 79, 85, 89;

**11.4:** Tangent Planes and Linear Approximations.
  # 1, 11, 15, 19, 25, 29, 31, 33, 39;

**11.5:** The Chain Rule.
  # 5, 11, 13, 15, 17, 23, 29, 37, 43, 47;

**11.6:** Directional Derivatives and the Gradient Vector.
  # 1, 5, 7, 11, 19, 23, 27, 31, 37, 41, 43, 47, 51, 57;

**11.7:** Maximum and Minimum Values.
  # 3, 5, 7, 11, 23, 35, 37, 41, 47, 51;

**11.8:** Lagrange Multipliers.
  # 1, 3, 11, 19, 23, 35, 41;

**12.1:** Double Integrals over Rectangles.
  # 1, 5, 9, 13;

**12.2:** Iterated Integrals.
  # 3, 9, 13, 17, 21, 23, 27, 31, 35, 37;

**12.3:** Double Integrals over General Regions.
  # 3, 5, 13, 15, 17, 25, 37, 45, 51, 53, 59;

**12.4:** Double Integrals in Polar Coordinates.
  # 1, 5, 11, 13, 21, 27, 31;

**12.5:** Applications of Double Integrals.
  # 1, 5, 11, 17, 23;

**12.6:** Surface Area.
  # 3, 7, 9, 11, 25;

**12.7:** Triple Integrals.
  # 3, 7, 11, 15, 19, 23, 25, 27, 33, 39, 43, 51;

**12.8:** Triple Integrals in Cylindrical and Spherical Coordinates.
  # 3, 5, 7, 11, 17, 21, 29, 31;

**12.9:** Change of Variables in Multiple Integrals.
  # 1, 5, 7, 11, 15, 17, 25;

**13.1:** Vector Fields.
  # 5, 11, 17, 23, 25, 35;

**13.2:** Line Integrals.
  # 3, 7, 11, 17, 21, 33, 39, 43, 47;

**13.3:** The Fundamental Theorem for Line Integrals.
  # 1, 7, 11, 15, 25, 31, 35;

**13.4:** Green's Theorem.
  # 1, 3, 7, 9, 13, 17, 23;

**13.5:** Curl and Divergence.
  # 1, 5, 11, 15, 19, 27, 31;

**13.6:** Surface Integrals.
  # 5, 9, 17, 21, 27, 37, 41;

**13.7:** Stokes' Theorem.
  # 5, 7, 9, 13, 15, 17;

**13.8:** The Divergence Theorem.
  # 1, 3, 7, 11, 19, 31;