MATH 1552 Integral Calculus: Stokes' Theorem

1. What is the name of the theorem that states that the line integral around the boundary of a closed curve is equal to the surface integral of the curl of the vector field over the surface?

A. The Fundamental Theorem of Calculus
B. The Divergence Theorem
C. Green's Theorem
D. Stokes' Theorem

2. What is the surface integral of the curl of the vector field over the surface in the figure below?

A. 0
B. 1
C. 2
D. 3

3. Which of the following is NOT a necessary condition for Stokes' Theorem to be valid?

A. The surface must be closed.
B. The surface must be orientable.
C. The surface must be smooth.
D. The vector field must be continuous.

4. Which of the following is NOT a sufficient condition for Stokes' Theorem to be valid?

A. The surface must be closed.
B. The surface must be orientable.
C. The surface must be smooth.
D. The vector field must be continuous.

5. What is the line integral around the boundary of the closed curve in the figure below?

A. 0
B. 1
C. 2
D. 3

Answer Key:

1. D
2. A
3. D
4. B
5. C