

1. Green's Theorem states that:

A. The area of a region enclosed by a simple closed curve is equal to the integral of the curve's tangent vector field.

B. The line integral of a vector field around a closed curve is equal to the double integral of the curl of the vector field over the region enclosed by the curve.

C. The line integral of a vector field around a closed curve is equal to the integral of the divergence of the vector field over the region enclosed by the curve.

D. The line integral of a vector field around a closed curve is equal to the integral of the gradient of the vector field over the region enclosed by the curve.

2. Which of the following is NOT a necessary condition for Green's Theorem to be applicable?

A. The region must be simply connected.

B. The region must be bounded.

C. The region must be closed.

D. The region must be open.

3. Which of the following is NOT a sufficient condition for Green's Theorem to be applicable?

A. The region must be simply connected.

B. The region must be bounded.

C. The region must be closed.

D. The region must be open.

4. Which of the following is NOT a necessary condition for the line integral around a closed curve to be zero?

A. The vector field must be continuous.

B. The vector field must be differentiable.

C. The vector field must be conservative.

D. The vector field must be solenoidal.

5. Which of the following is NOT a sufficient condition for the line integral around a closed curve to be zero?

A. The vector field must be continuous.

B. The vector field must be differentiable.

C. The vector field must be conservative.

D. The vector field must be solenoidal.

6. Which of the following is NOT a necessary condition for the line integral around a closed curve to be equal to the double integral of the curl of the vector field over the region enclosed by the curve?

- A. The region must be simply connected.
- B. The region must be bounded.
- C. The region must be closed.
- D. The region must be open.

7. Which of the following is NOT a sufficient condition for the line integral around a closed curve to be equal to the double integral of the curl of the vector field over the region enclosed by the curve?

- A. The region must be simply connected.
- B. The region must be bounded.
- C. The region must be closed.
- D. The region must be open.

8. Which of the following is NOT a necessary condition for the line integral around a closed curve to be equal to the integral of the divergence of the vector field over the region enclosed by the curve?

- A. The vector field must be continuous.
- B. The vector field must be differentiable.
- C. The vector field must be solenoidal.
- D. The vector field must be irrotational.

9. Which of the following is NOT a sufficient condition for the line integral around a closed curve to be equal to the integral of the divergence of the vector field over the region enclosed by the curve?

- A. The vector field must be continuous.
- B. The vector field must be differentiable.
- C. The vector field must be solenoidal.
- D. The vector field must be irrotational.

10. Which of the following is NOT a necessary condition for the line integral around a closed curve to be equal to the integral of the gradient of the vector field over the region enclosed by the curve?

- A. The vector field must be continuous.
- B. The vector field must be differentiable.
- C. The vector field must be conservative.

D. The vector field must be solenoidal.

11. Which of the following is NOT a sufficient condition for the line integral around a closed curve to be equal to the integral of the gradient of the vector field over the region enclosed by the curve?

A. The vector field must be continuous.

B. The vector field must be differentiable.

C. The vector field must be conservative.

D. The vector field must be solenoidal.

Answer Key:

1. B
2. D
3. A
4. D
5. A
6. D
7. A
8. D
9. A
10. D
11. A