

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the derivative of the function at P_0 in the direction of u .

1) $f(x, y) = \tan^{-1} \frac{-3x}{y}$, $P_0(-7, -8)$, $u = 12i - 5j$ 1) _____

A) $\frac{456}{6565}$ B) $\frac{27}{505}$ C) $\frac{477}{6565}$ D) $\frac{393}{6565}$

Calculate the circulation of the field F around the closed curve C .

2) $F = (-x - y)i + (x + y)j$, curve C is the counterclockwise path around the circle with radius 3 centered at $(3, 6)$ 2) _____

A) $18(1 +)$ B) $18(1 +) + 108$ C) 18 D) 36

Find the potential function f for the field F .

3) $F = \frac{1}{z}i - 2j - \frac{x}{z^2}k$ 3) _____

A) $f(x, y, z) = \frac{x}{z} - 2 + C$ B) $f(x, y, z) = \frac{2x}{z} - 2y + C$

C) $f(x, y, z) = \frac{x}{z} + C$ D) $f(x, y, z) = \frac{x}{z} - 2y + C$

Evaluate. The differential is exact.

4) $\int_{(0,0,0)}^{(, ,)} -2 \sin x \cos x \, dx - \sin y \cos z \, dy - \cos y \sin z \, dz$ 4) _____

A) -2 B) 2 C) 0 D) 1

Using Green's Theorem, compute the counterclockwise circulation of F around the closed curve C .

5) $F = (x^2 + y^2)i + (x - y)j$; C is the rectangle with vertices at $(0, 0)$, $(8, 0)$, $(8, 5)$, and $(0, 5)$ 5) _____

A) 160 B) 0 C) -160 D) 240