

Name _____

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

Evaluate the line integral along the curve C.

- 1) $\int_C (xz + y^2) \, ds$, C is the curve $r(t) = (8 - 2t)i + tj - 2tk$, $0 \leq t \leq 1$ 1) _____
- A) $\frac{29}{3}$ B) -19 C) 29 D) $-\frac{19}{3}$

Find the work done by F over the curve in the direction of increasing t.

- 2) $F = -5yi + 5xj + 6z^7k$; C: $r(t) = \cos t i + \sin t j$, $0 \leq t \leq 3$ 2) _____
- A) $W = 15$ B) $W = \frac{45}{2}$ C) $W = 0$ D) $W = 30$

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

- 3) $F = xy^2i + x^2yj$; curve C is the counterclockwise path around $C_1 \cup C_2$: $C_1: r(t) = 6 \cos t i + 6 \sin t j$, $0 \leq t \leq 2\pi$ 3) _____
- $C_2: r(t) = ti$, $-6 \leq t \leq 6$
- A) 0 B) 72 C) 6 D) 36

Calculate the flux of the field F across the closed plane curve C.

- 4) $F = x^2i + y^2j$; the curve C is the closed counterclockwise path around the triangle with vertices at $(0, 0)$, $(3, 0)$, and $(0, 1)$ 4) _____
- A) 12 B) 0 C) 2 D) 4

Calculate the flow in the field F along the path C.

- 5) $F = m(xy^2z^3)$; C is the line segment from $(6, 1, 1)$ to $(7, 1, -1)$ 5) _____
- A) 23 B) 14 C) -13 D) -8

Solve the problem.

- 6) The radial flow field of an incompressible fluid is shown below. Which of the closed paths would exhibit a non-zero flux?

6) _____



A) A and B

B) A, B, and C

C) C

D) none of these

- 7) The radial flow field of an incompressible fluid is shown below. For which of the closed paths is the circulation not necessarily zero?

7) _____



A) A and B only

B) none of these

C) C only

D) A, B, and C