



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Compute the 2D curl: $\text{curl } F = \partial Q/\partial x - \partial P/\partial y$ for $F = (P, Q)$.
- ✓ Interpret curl as the rotational (swirling) tendency of a field.
- ✓ Recognise irrotational (zero-curl) fields.
- ✓ Relate curl to divergence conceptually.



Section A • Concept Check

• BEGINNER

$4 \times 1 = 4$

- 1 2D curl of $F = (3y, -3x) = ?$
☐ A. 6 ☐ B. -6 ☐ C. 0 ☐ D. -3
- 2 2D curl of $F = (x^2, y^2) = ?$
☐ A. 0 ☐ B. $2x - 2y$ ☐ C. $4xy$ ☐ D. 2
- 3 2D curl of $F = (-2y, 2x) = ?$
☐ A. 0 ☐ B. 2 ☐ C. 4 ☐ D. -4
- 4 A field with zero curl everywhere is called:
☐ A. rotational ☐ B. irrotational ☐ C. divergent
☐ D. constant



Section B • Problem Solving

• INTERMEDIATE

$2 + 3 \times 3 = 11$

- 5 For $F = (P, Q)$, the 2D curl = _____.
- 6 2D curl of $F = (3y, -3x) =$ _____.
- 7 Find the 2D curl of $F = (3y, -3x)$.

- 8 Find the 2D curl of $F = (x^2, y^2)$.

- 9 Find the 2D curl of $F = (xy, x^2)$.



Section C • Challenge

• CHALLENGE

5

- 10 Find the 2D curl of $F = (-2y, 2x)$.

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature _____

Parent's Signature _____

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-B 2-A 3-C 4-B | 5 $\partial Q/\partial x - \partial P/\partial y$ 6 -6 7 = -6 8 = 0 9 = x | 10 = 4