

Partial solutions for 2 3 4 6 7 9 12-14 19 5 8 20

2. $\int_C \nabla F \cdot dr = f(2, 2) - f(1, 0) = 6$

3. $F(x, y)$ is not conservative.

4. $f(x, y) = xy^2 - x^2 + K$

6. $f(x, y) = ye^x + e^y + K$

7. $f(x, y) = ye^x + x \sin y + K$

9. $f(x, y) = y^2 \sin x + x \cos y + K$

12. $f(x, y) = 3x + x^2y^2, \int_C \nabla f \cdot dr = 9$

13. $f(x, y) = \frac{1}{3}x^3y^3, \int_C \nabla f \cdot dr = -9$

14. $f(x, y) = xe^{xy}, f(0, 2) - f(1, 0) = -1$

19. $f(x, y) = x^2e^{-y} + y^2, f(2, 1) - f(1, 0) = 4/e$

5. $f(x, y) = y^e xy + K$

8. $f(x, y) = x^2y = xy^{-2} + K$

20. $f(x, y) = x \sin y + \cos y, f(1, \pi) - f(2, 0) = -2$