Quiz 21 (Problems)

1. Find a conservative vector field $\mathbf{F}$ that has the potential $f(x, y, z) = 4x^2y - 2y^2z^3$¿

2. Find the curl and divergence of $\mathbf{F} = \langle xz^2, 2yz, 3xy^2 \rangle$.

3. Evaluate the line integral $\int_C (xy^2)dx + (4xy^3)dy$ along C: $x = y^2$ from $(0, 0)$ to $(4, 2)$.

Quiz 21 (Answers)

1. (Math-252 Quiz 21)
   $\mathbf{F} = \nabla f = \langle 8xy, 4x^2 - 4yz^3, -6y^2z^2 \rangle$

2. (Math-252 Quiz 21)

   - Curl: $\langle 6xy - 2y, 2xz - 3y^2, 0 \rangle$
   - Divergence: $z^2 + 2z$

3. (Math-252 Quiz 21)
   $\int_C (xy^2)dx + (4xy^3)dy = \int_0^2 (6t^5)dt = 64$