

$$1) \int (3x^2yz^3 + yz) dx = x^3yz^3 + xyz + g(y,z) \quad \text{curl}(F)=0$$

$$\int (3x^3yz^3 + xz) dy = x^3yz^3 + xyz + g(x,z) \quad g(y,z) - g(x,z) = g(x,y)$$

$$\int (3x^3yz^2 + xy) dz = x^3yz^3 + xyz = g(x,y) \quad f = x^3yz^3 + xyz$$

$$2) \int_0^1 \int_0^1 5 - 10 \, dx dy = -5$$