Math 2513 – Summer 2024

Assignment 5

Due: July 26, 2024 – 11:59PM

Q1 (3) – Are any of the following vector fields conservative? Use the screening to test whether they might be conservative, or whether they definitely are not.

a) $(x^2 - yx)\,i + (y^2 - xy)\,j$
b) $(2xe^{xy} + x^2ye^{xy})\,i + (x^3e^{xy} + 2y)\,j$
c) $(2x^3y^4 + x)\,i + (2x^4y^3 + y)\,j$

Q2 (4) – Are any of the following conservative? If so, find the associated potential field.

a) $(2xy^3z^4)\,i + (3x^2y^2z^4)\,j + (4x^2y^3z^3)\,k$
b) $(2x\cos(y) - 2z^3)\,i + (3 + 2ye^z - x^2\sin(y))\,j + (y^2e^z - 6xz^2)\,k$