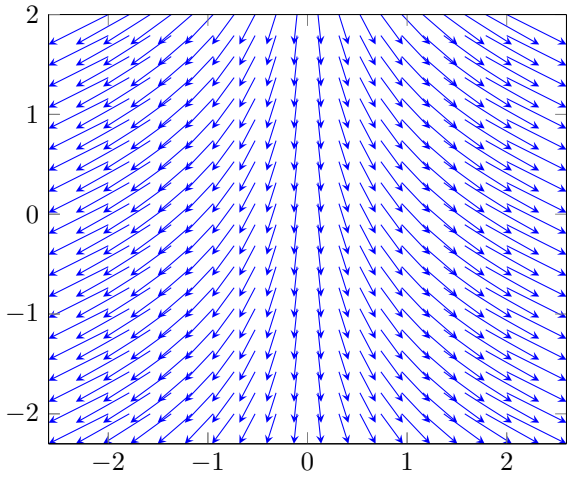
MA 261 Quiz 9

March 26, 2019

If you do not know how to do any one of these problems, circle **"(E) I don't know"** as your answer choice. You will receive **two points** for doing that. **Each problem** is worth **five points**. You get **two points** for writing your **full name** and **three points** for writing your **section number**.

Problem 9.1. The graph below most closely resembles which of the following vector fields?



(A) $2x\mathbf{i} - 2\mathbf{j}$
(B) $\mathbf{i} + (x - y)\mathbf{j}$
(C) $-(y/x^2)\mathbf{i} + (1/x)\mathbf{j}$
(D) $2x\mathbf{i} + 2y\mathbf{j}$
(E) I don't know how to do this problem

Problem 9.2. Evaluate the line integral $\int_C 4y\,dx + 5z\,dy + 3x\,dz$, where C is the curve $\mathbf{r}(t) = t\mathbf{i} + t^3\mathbf{j} + t^2\mathbf{k}$ for $0 \le t \le 1$.
(A) 3
(B) 4
(C) 5
(D) 6
(E) I don't know how to do this

Problem 9.3. Evaluate the integral $\iiint_E \sqrt{x^2 + y^2 + z^2}\,dV$, where E is the region above the cone $\sqrt{3}z = \sqrt{x^2 + y^2}$ and below the sphere $x^2 + y^2 + z^2 = 10$.

(A) 5π
(B) 25π
(C) $50\pi(1 - \sqrt{3}/2)$
(D) $50\pi(1 - \sqrt{2}/2)$
(E) I don't know how to do this