Special Problem 2-5.21

For each question below, answer with response A, B, **or** C, (i.e., **one** response per question!) defined as:

A: Yes, it **must** be!

B: Perhaps, it **might** be.

C: No, it **cannot** be!

No justification is required.

1. If $\nabla \times \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ conservative? _____

2. If $\nabla \times \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ solenoidal? _____

3. If $\nabla \cdot \nabla \times \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ conservative? _____

4. If $\nabla \cdot \nabla \times \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ solenoidal? _____

5. If $\nabla \cdot \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ conservative? _____

6. If $\nabla \cdot \boldsymbol{A}(\bar{r}) = 0$, is $\boldsymbol{A}(\bar{r})$ solenoidal? _____

7. If $\nabla \times \boldsymbol{A}(\bar{r}) = (x-3)^2 z\, \hat{a}_y$, is $\boldsymbol{A}(\bar{r})$ conservative? _____

8. If $\nabla \times \boldsymbol{A}(\bar{r}) = (x-3)^2 z\, \hat{a}_y$, is $\boldsymbol{A}(\bar{r})$ solenoidal? _____

9. If $\boldsymbol{A}(\bar{r}) = \nabla r^2 \cos\theta$, is $\boldsymbol{A}(\bar{r})$ conservative? _____

10. If $\boldsymbol{A}(\bar{r}) = \nabla r^2 \cos\theta$, is $\boldsymbol{A}(\bar{r})$ solenoidal? _____