DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 301 Methods of Applied Mathematics   Term 061

QUIZ # 3(a)

Name ______________________ ID # ___________   Section # ____

Q1) In the following, use the *Divergence Theorem* to write the given surface integral as a triple integral over region **D**, showing correct integral limits. Then **evaluate** the RHS you obtain.

$$\iint_S (2x\underline{i} + 4xe^z\,\underline{j} + 3z\underline{k}) \bullet \underline{n}\,ds$$

where **D** is the region bounded by $2x + y + z = 6$ and the coordinate planes.

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QUIZ # 3(b)

Name ______________________ ID # __________ Section # ____

Q1) In the following, use the *Divergence Theorem* to write the given surface integral as a triple integral over region **D**, showing correct integral limits. Then **evaluate** the RHS you obtain.

$$\iint_S (x^3 \underline{i} + y^3 \underline{j} + 2x\underline{k}) \bullet \underline{n} ds$$

where **D** is the region bounded by cylinder $x^2 + y^2 = 4$ and $z = 1$ to $z = 3$.

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QUIZ # 3(c)

Name ______________________ ID # ___________ Section # ____

Q1) In the following, use the *Divergence Theorem* to write the given surface integral as a triple integral over region **D**, showing correct integral limits. Then **evaluate** the RHS you obtain.

$$\iint_S (x^3 \underline{i} + y^3 \underline{j} + z^3 \underline{k}) \bullet \underline{n} ds$$

where **D** is the region bounded by hemisphere in the upper half-space $x^2 + y^2 + z^2 = 9$ and $z = 0$.