

(5) evaluate $\int_0^1 \int_0^1 \int_0^1 (x+y+z) dx dy dz$.

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$$\Rightarrow \int_0^1 \int_0^1 \int_0^1 (x+y+z) dx dy dz$$

$$\Rightarrow \int_0^1 \int_0^1 \left[\frac{x^2}{2} + (y+z)x \right]_0^1 dy dz$$

$$= \int_0^1 \int_0^1 \left[\frac{1}{2} + (y+z) \right] dy dz$$

$$= \int_0^1 \left[\frac{1}{2} y + \frac{y^2}{2} + zy \right]_0^1 dz$$

$$= \int_0^1 \left(\frac{1}{2} + \frac{1}{2} + z \cdot 1 \right) dz$$

$$= \int_0^1 (1+z) dz$$

$$= z + \frac{z^2}{2} \Big|_0^1$$

$$= 1 + \frac{1}{2}$$

$$= \frac{3}{2}$$

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