

ĐÁP ÁN TOÁN A3 (THI NGÀY 8/1/2018)

$$1A) \int_0^1 dx \int_0^{x^2} f \cdot dy + \int_1^2 dx \int_0^{\sqrt{2x-x^2}} f \cdot dy \quad (1đ) \quad S = \frac{1}{3} + \frac{\pi}{4} \quad (0.5đ)$$

$$1b) \int_{-\sqrt{2}}^{\sqrt{2}} dx \int_{-\sqrt{2-x^2}}^{\sqrt{2-x^2}} dy \int_{-\sqrt{4-x^2-y^2}}^{-\sqrt{2}} f \cdot dz = \int_0^{2\pi} d\varphi \int_0^{\sqrt{2}} r dr \int_{-\sqrt{4-r^2}}^{-\sqrt{2}} f \cdot dz = \int_0^{2\pi} d\varphi \int_{3\pi/4}^{\pi} d\theta \int_{\frac{-\sqrt{2}}{\cos\theta}}^2 r^2 \sin\theta \cdot dr \quad (1đ)$$

$$S = \frac{\pi(16 - 10\sqrt{2})}{3} \quad (0.5đ)$$

$$1c) K = - \left[\iint_D -3dA - \int_{OB} \dots \right] = 3 \cdot \frac{1}{2} - \int_0^1 dx = 1/2 \quad (1đ)$$

$$2a) \operatorname{div} = 3(x^2 + y^2); \overrightarrow{\operatorname{rot}} = (6yz; y; -z) \quad (1đ)$$

$$2b) S = \iint_{x^2+y^2 \leq 1} \sqrt{1+4(x^2+y^2)} dA = \int_0^{2\pi} d\varphi \int_0^1 r \sqrt{1+4r^2} dr = \frac{\pi(5\sqrt{5}-1)}{6} \quad (1đ)$$

$$2c) \Phi = \iiint_V 3(x^2+y^2) dV - \iint_{z=1} \dots = \int_0^{2\pi} d\varphi \int_0^1 r dr \int_{r^2}^1 3r^2 dz - \iint_{x^2+y^2 \leq 1} 2dA = \frac{-3\pi}{2} \quad (1đ)$$

3a) Nghiệm đặc trưng $k=2; k=-3$ (0.5đ)

$$\text{Nghiệm riêng } y_0 = (-4x-3)e^x + \left[\frac{-\sin x + 7 \cos x}{25} \right] \quad (1đ)$$

3b) Phương trình vptp, $u = y^2 \sin x - x^3 y + x^2 + e^x$ (1đ), nghiệm TQ $u=C$ (0.5đ)