Prøveeksamen opgave 8

Udregn planintegralet

$$\int_0^1 \int_y^{2y} (x+y)\ dx\ dy = \frac{5}{\square}$$

— Prøveeksamenssæt

Udregn

$$\int_0^1 \int_y^{2y} (x+y)\ dx\ dy$$

$$\int_0^1 \left[\frac{1}{2}x^2 + yx\right]_{x=y}^{x=2y}\ dx$$

$$\int_0^1 \left(\frac{1}{2}4y^2 + 2y^2\right) - \left(\frac{1}{2}y^2 + y^2\right)\ dx$$

$$\int_0^1 (2y^2 + 2y^2) - \left(\frac{1}{2}y^2 + y^2\right)\ dx$$

$$\int_0^1 4y^2 - \frac{3}{2}y^2\ dx$$

$$\int_0^1 \frac{5}{2}y^2\ dx$$

$$\frac{5}{2}\int_0^1 y^2\ dx$$

$$\frac{5}{2}\left[\frac{1}{3}y^3\right]_0^1$$

$$\left[\frac{5}{6}y^3\right]_0^1$$

$$\frac{5}{6}$$

Derfor er svaret som skal stå i boksen 6