

$$\textcircled{7} \int_0^2 \int_0^1 (2x+y)^8 dx dy$$

$$\int_0^2 \int_0^1 (2x+y)^8 dx = \frac{1}{2} \int_0^2 (2x+y)^8 dx$$

$$u = 2x+y, \quad du = 2dx, \quad \frac{du}{2} = dx$$

$$= \frac{1}{2} \int_0^2 \frac{u^8}{2} \Big|_{u=y}^{u=2x+y} dy = \frac{1}{4} \int_0^2 (u^8 \Big|_{u=y}^{u=2x+y}) dy$$

$$= \frac{1}{4} \int_0^2 \left[\frac{(2x+y)^9}{9} - \frac{y^9}{9} \right] dy$$

$$= \frac{1}{36} \int_0^2 [(2x+y)^9 - y^9] dy$$

$$\frac{y^{10}}{10} = \frac{1048576}{100} = \frac{261,632}{25} = 5814.04$$

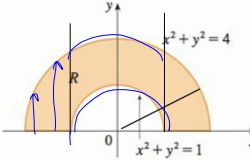
$$\frac{1}{36} \int_0^2 (2x+y)^8 dx = \frac{1}{36} \left[\frac{(2x+y)^9}{9} \right] + C = \frac{u^9}{324} + C$$

$$\int (2x+y)^8 dy$$

$$u = 2x+y, \quad du = 2dy, \quad dy = \frac{du}{2}$$

$$= \int u^8 \frac{du}{2} = \frac{1}{2} \int u^8 du = \frac{1}{2} \cdot \frac{u^9}{9} + C = \frac{(2x+y)^9}{18} + C$$

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$f(x,y) = 3x + 4y^2$

$x^2 + y^2 = 4 \Rightarrow y = \pm \sqrt{4-x^2}$
 $= +\sqrt{4-x^2}$ by picture

$\int_{-2}^2 \int_0^{\sqrt{4-x^2}} dy dx + \int_{-1}^1 \int_{\sqrt{1-x^2}}^{\sqrt{4-x^2}} dy dx$

$+ \int_1^2 \int_0^{\sqrt{4-x^2}} dy dx$

~ Rectangles coords
 It's difficult.

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