Iterated Integrals - Practice Problems

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1. Compute the following double integral over the indicated rectangle (a) by integrating with respect to x first and (b) by integrating with respect to y first. $\iint_R 12x - 18y\,dA \qquad R = [-1,4] \times [2,3]$.

For problems 2 – 8 compute the given double integral over the indicated rectangle.

2. $\iint_R 6y\sqrt{x} - 2y^3\,dA \qquad R = [1,4] \times [0,3]$

3. $\iint_R \dfrac{\mathbf{e}^x}{2y} - \dfrac{4x-1}{y^2}\,dA \qquad R = [-1,0] \times [1,2]$

4. $\iint_R \sin(2x) - \dfrac{1}{1+6y}\,dA \qquad R = \left[\dfrac{\pi}{4}, \dfrac{\pi}{2}\right] \times [0,1]$

5. $\iint_R y\mathbf{e}^{y^2-4x}\,dA \qquad R = [0,2] \times \left[0, \sqrt{8}\right]$

6. $\iint_R xy^2\sqrt{x^2+y^3}\,dA \qquad R = [0,3] \times [0,2]$

7. $\iint_R xy\cos\left(y\,x^2\right)\,dA \qquad R = [-2,3] \times [-1,1]$

8. $\iint_R xy\cos(y) - x^2\,dA \qquad R = [1,2] \times \left[\dfrac{\pi}{2}, \pi\right]$

9. Determine the volume that lies under $f(x,y) = 9x^2 + 4xy + 4$ and above the rectangle given by $[-1,1] \times [0,2]$ in the xy-plane.