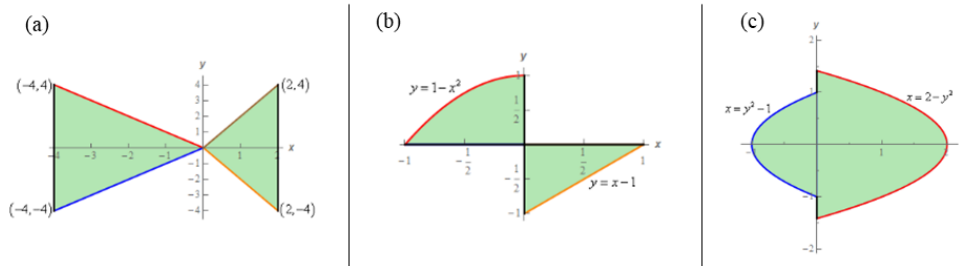


1. Compute $\iint_R 2xy - x^2 + 1 \, dA$ over $R = [2, 3] \times [-1, 1]$ in the order given below.
 - (a) Integrate with respect to x first then y .
 - (b) Integrate with respect to y first then x .
2. Integrate each of the following:
 - (a) $\iint_R y^5 - x^2 e^y \, dA$, $R = [-1, 2] \times [0, 4]$
 - (b) $\iint_R \frac{\ln(4xy)}{xy} \, dA$, $R = [1, 2] \times [3, 4]$
 - (c) $\iint_D 12x^2y - y^2 \, dA$, $D = \{(x, y) \mid -2 \leq x \leq 2, -x^2 \leq y \leq x^2\}$
 - (d) $\iint_D 7y^3 e^{x^2+1} \, dA$ where D is the region bounded by $y = 2\sqrt[4]{x}$, $x = 9$ and the x -axis
3. Integrate the following functions over their corresponding regions



- (a) $f(x, y) = xy - y^2$
 - (b) $f(x, y) = 12x^3 - 3$
 - (c) $f(x, y) = 6y^2 + 10yx^4$
4. Evaluate $\iint_D xy - y^3 \, dA$ where D is the region bounded by $y = x^2$, $y = -x^2$, and $x = 2$ in the order given below
 - (a) Integrate with respect to x first then y .
 - (b) Integrate with respect to y first then x .
 5. Determine the region we would get by applying the given transformation T to region R for each below.
 - (a) R : region inside $\frac{x^2}{25} - 49y^2 = 1$, $T : x = 5u, y = \frac{1}{7}v$
 - (b) R : region bounded by $xy = 4$, $xy = 10$, $y = x$, $y = 6x$, $T : x = 2\sqrt{\frac{u}{v}}$, $y = \frac{1}{7}(10u - 3v)$
 6. Evaluate the following integrals using the given transformation.
 - (a) $\iint_R \frac{15y}{x} \, dA$ where R is the region bounded by $xy = 2$, $xy = 6$, $y = 4$, $y = 10$ using the transformation $x = v$, $y = \frac{2u}{3v}$
 - (b) $\iint_R 2y - 8x \, dA$ where R is the parallelogram with vertices $(6, 0)$, $(8, 4)$, $(6, 8)$, $(4, 4)$ using the transformation $x = \frac{1}{4}(u - v)$, $y = \frac{1}{2}(u + v)$