p.1142 (14.4)

Evaluate the indicated line integral (a) directly and (b) using Green's Theorem.

5. $\oint_C (x^2 - y)dx + (y^2)dy,$ where C is the circle $x^2 + y^2 = 1$ oriented counterclockwise

7. $\oint_C (x^2)dx - (x^3)dy,$ where C is the square from (0, 0) to (0, 2) to (2, 2) to (2, 0) to (0, 0)

Use Green's Theorem to evaluate the indicated line integral.

9. $\oint_C (xe^{2x})dx - (3x^2 y)dy,$ where C is the square from (0, 0) to (3, 0) to (3, 2) to (0, 2) to (0, 0)

11. $\oint_C \left(\frac{x}{x^2+1} - y\right)dx + (3x - 4\tan y)dy,$ where C is the portion of $y = x^2$ from (-1, 1) to (1, 1) followed by the portion of $y = 2 - x^2$ from (1, 1) to (-1, 1)

13. $\oint_C (\tan x - y^3)dx + (x^3 - \sin y)dy,$ where C is the circle $x^2 + y^2 = 2$ oriented clockwise

15. $\oint_C \vec{F} \cdot d\vec{r},$ where $\vec{F} = \langle x^3 - y, x + y^3 \rangle$ and C is formed by $y = x^2$ and $y = x$ oriented positively

Use a line integral to compute the area of the given region.

25. The ellipse $4x^2 + y^2 = 16$

27. The region bounded by $x^{2/3} + y^{2/3} = 1$ (Hint: Let $x = \cos^3 t$ and $y = \sin^3 t$)

29. The region bounded by $y = x^2$ and $y = 4$