Name: ID #: Section #:

(**1**) Use Green's theorem to evaluate

$$\oint_C xy^2 dx + 3\cos y \; dy,$$

where C is the boundary of the region in the first quadrant determined by the graphs of $y = x$ and $y = x^2$.

(**2**) Evaluate the surface integral

$$\iint_S (xy + z) \; dS,$$

where S is the cone $z = \sqrt{x^2 + y^2}$ inside the cylinder $x^2 + y^2 = 1$.

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(**1**) Use Green's theorem to evaluate

$$\oint_C 3\cos x \; dx + x^2 y \; dy,$$

where C is the boundary of the region determined by the graphs of $x = y^2,\ y = 0$ and $x = 4$.

(**2**) Evaluate the surface integral

$$\iint_S (5 - z + x)(1 + 4x^2 + 4y^2)^{-1/2} \; dS,$$

where S is part of the paraboloid $z = 5 - x^2 - y^2$ inside the cylinder $x^2 + y^2 = 4$.