

Calc 3 - Assignment 30

Note Title

11/17/2013

① Evaluate $\oint_C y dx - x dy$, $C = \text{unit circle}$

a) directly

b) using Green's theorem

② Use Green's theorem to evaluate:

a) $\oint_C e^x dx + 2xe^x dy$, C square $x=0, x=1, y=0, y=1$

b) $\oint_C x^2 y^2 dx + 4xy^3 dy$, C triangle $(0,0), (1,1), (0,1)$

c) $\oint_C (y + e^{xy}) dx + (2x + \cos(y^2)) dy$, C region between $y=x^2$ and $x=y^2$

d) $\oint_C \sin(y) dx + x \cos(y) dy$, C is the ellipse $x^2 + xy + y^2 = 1$

(3) Evaluate $\int_C \vec{F} \cdot d\vec{r}$ for.

a) $\vec{F} = \langle \sqrt{x^2 + y^2}, x^2 + \sqrt{y} \rangle$, C the curve $y = \sin(x)$ from $(0,0)$ to $(\pi,0)$ and the line segment from $(\pi,0)$ to $(0,0)$

b) $\vec{F} = \langle e^x + x^2y, e^y - xy^2 \rangle$, $C: x^2 + y^2 = 25$

c) $\vec{F} = \langle y - \ln(x^2 + y^2), 2 \arctan(y/x) \rangle$, C circle $(x-2)^2 + (y-2)^2 = 1$