13.1 #8 $\vec{F} = xz\vec{i} + y^2z\vec{j} + xz\vec{k}$

Compute div $\vec{F}$ and curl $\vec{F}$ at $P(1,-1,2)$

13.3 #28 $\vec{F} = yz\vec{i} + xz^2\vec{j} + 2xyz\vec{k}$

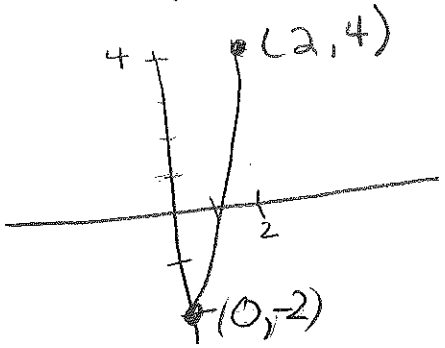
Show $\vec{F}$ is conservative (curl $\vec{F} = \vec{0}$) and find a scalar potential

#40 Verify the line integral is independent of path and evaluate the line integral

$$\int_C [(3x^2y + y^2)\,dx + (x^3 + 2xy)\,dy]$$

M N

C: $\vec{R}(t) = \langle t, t^2 + t - 2 \rangle \quad 0 \le t \le 2$

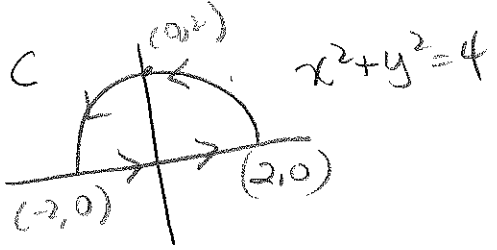


13.4 Use Green's Theorem in the plane to evaluate the line integrals over the closed curves

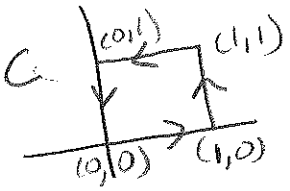
$$\oint_C (2y\,dx - x\,dy)$$

$M = 2y$, $N = -x$

#7



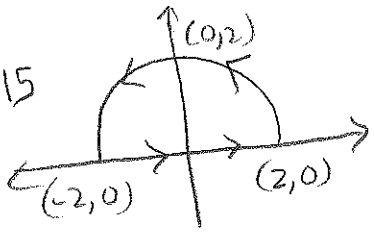
#8



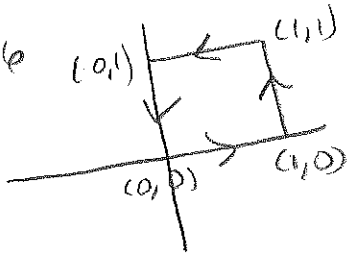
$$\oint_C (x\sin(x)\,dx - e^{y^2}\,dy)$$

$M = x\sin(x)$, $N = -e^{y^2}$

#15



#16

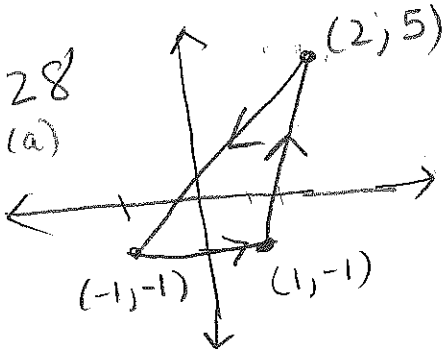


$$\oint_C -y\,dx + x\,dy$$

$M = -y$, $N = x$

#28

(a)



(b)