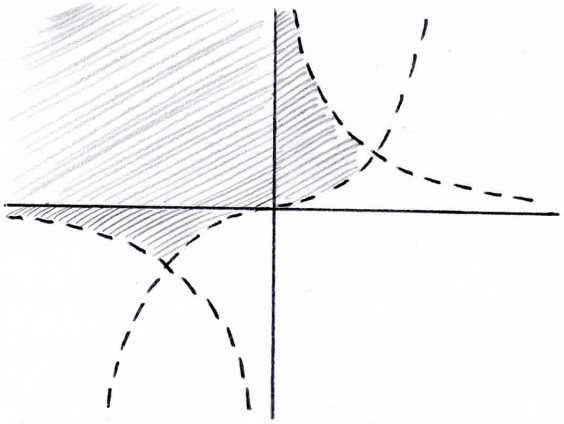
Soluzioni test

A.

1.



aperto	SI
chiuso	NO
connesso	SI
limitato	NO
compatto	NO

2. $y(x) = \frac{1}{2} x \operatorname{sen} x + c_1 \cos x + c_2 \operatorname{sen} x$

3. $\operatorname{grad} f(0,0) = (1,0)$

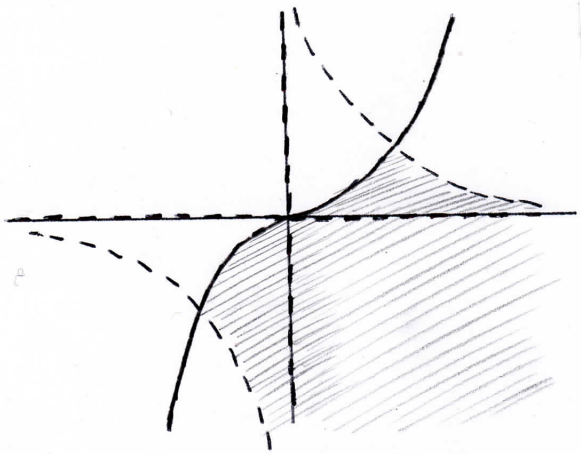
4. $x = 1 + t, \quad y = -1 - 2t, \quad z = 1 - t$

5. $0 \leq z \leq \sqrt{1-x^2}$
$x^2 + y^2 \leq 1, \quad x, y \geq 0$ $\longrightarrow \int_0^1 dx \int_0^{\sqrt{1-x^2}} dy \int_0^{\sqrt{1-x^2}} f(x,y,z)\, dz$

6. $f_{xx}(P_0) < 0$, $\det \mathcal{H}(P_0) > 0$ oppure $f_{yy}(P_0) < 0$, $\det \mathcal{H}(P_0) > 0$

B.

1.



aperto	NO
chiuso	NO
connesso	NO
limitato	NO
compatto	NO

2. $y(x) = -\frac{1}{2} x \cos x + c_1 \cos x + c_2 \operatorname{sen} x$

3. $\operatorname{grad} f(0,0) = (0,1)$

4. $x = -1 + t, \quad y = 1 - 2t, \quad z = -1 - t$

5. $0 \leq z \leq 1$
$x^2 + y^2 \leq 1$
$0 \leq x \leq \sqrt{1-z^2}$
$y \geqslant 0$

$\int_0^1 dz \int_0^{\sqrt{1-z^2}} dx \int_0^{\sqrt{1-x^2}} f(x,y,z)\, dy$

6. $f_{xx}(P_0) > 0$, $\det \mathcal{H}(P_0) > 0$ oppure $f_{yy}(P_0) > 0$, $\det \mathcal{H}(P_0) > 0$.