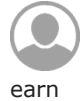


$$\int_M d\omega = \int_{\partial M} \omega$$



Metric spaces: compactness

Question #1 Consider the real numbers \mathbb{R} with a metric $d(x, y)$. For convenience abbreviate as follows:

- CB = closed and bounded
- S = sequentially compact (Bolzano-Weierstrass property)
- C = covering compact (Heine-Borel property)

Which of the following statements are true?

- (A) If d is the standard metric on \mathbb{R} then CB, S, and C are equivalent;
 (B) If d is the discrete metric on \mathbb{R} then SC and CC are equivalent, but CB is distinct;
 (C) If d is the discrete metric on \mathbb{R} then CB, S, and C are all distinct;
 (D) there is no metric on \mathbb{R} in which CB, S, and C are all distinct;
 (E) the discrete metric is the only metric on \mathbb{R} in which CB is distinct from S and C;
 (F) there are many possible metrics on \mathbb{R} in which CB is distinct from S and C.

