hemimetric

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A *hemimetric* on a set X is a function $d\colon X \times X \to \mathbb{R}$ such that

1. $d(x, y) \geq 0$;
2. $d(x, z) \leq d(x, y) + d(y, z)$;
3. $d(x, x) = 0$;

for all $x, y, z \in X$.

Hence, essentially d is a metric which fails to satisfy symmetry and the property that distinct points have positive distance. A hemimetric induces a topology on X in the same way that a metric does, a basis of open sets being

$$\{B(x, r) : x \in X, r > 0\},$$

where $B(x, r) = \{y \in X : d(x, y) < r\}$ is the r-ball centered at x.