

Metric space: $[x_1 = (0, 2), x_2 = (3, 0), x_3 = (1, 3), x_4 = (2, 1)]$

	x_1	x_2	x_3	x_4
x_1	0			
x_2	3.60555	0		
x_3	1.41421	3.60555	0	
x_4	2.23607	1.414214	2.23607	0

$$\begin{aligned}
D(X, Z) &= \overbrace{d(x_1, x_2) + d(x_1, x_1) + d(x_1, x_3) + d(x_1, x_4)}^X + \overbrace{d(x_2, x_2) + d(x_2, x_1) + d(x_2, x_3) + d(x_2, x_4)}^Z \\
&\quad \underbrace{\hspace{1.5cm}}_0 \quad \underbrace{\hspace{1.5cm}}_0 \\
&= d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4) + d(x_2, x_1) + d(x_2, x_3) + d(x_2, x_4) \\
&= 2d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4) + d(x_2, x_3) + d(x_2, x_4) \\
&= 3d(x_1, x_2) + 2d(x_1, x_3) + d(x_1, x_4) \\
&= 3 * 3.60555 + 2 * 1.41421 + 2.23607 \\
&= 15.88114
\end{aligned}$$

$$\begin{aligned}
D(X, Z') &= \overbrace{d(x_1, x_2) + d(x_1, x_1) + d(x_1, x_3) + d(x_1, x_4)}^X + \overbrace{d(x_3, x_2) + d(x_3, x_1) + d(x_3, x_3) + d(x_3, x_4)}^{Z'} \\
&\quad \underbrace{\hspace{1.5cm}}_0 \quad \underbrace{\hspace{1.5cm}}_0 \\
&= d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4) + d(x_3, x_2) + d(x_3, x_1) + d(x_3, x_4) \\
&= d(x_1, x_2) + 2d(x_1, x_3) + d(x_1, x_4) + d(x_3, x_2) + d(x_3, x_4) \\
&= 2d(x_1, x_2) + 2d(x_1, x_3) + 2d(x_1, x_4) \quad \quad \quad = 2 * 3.60555 - \\
&= 15.88114
\end{aligned}$$

$$\begin{aligned}
&= d(x_1, x_2) + d(x_1, x_1) + d(x_1, x_3) + d(x_1, x_4) + d(x_4, x_2) + d(x_2, x_2) + d(x_4, x_1) + d(x_2, x_1) + d(x_4, x_3) + d(x_2, x_3) + d(x_4, x_4) \\
&= d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4) + d(x_4, x_2) + d(x_4, x_1) + d(x_2, x_1) + d(x_4, x_3) + d(x_2, x_3) + d(x_2, x_4) \\
&= 2d(x_1, x_2) + d(x_1, x_3) + 2d(x_1, x_4) + 2d(x_4, x_2) + d(x_4, x_3) + d(x_2, x_3) \\
&= 3d(x_1, x_2) + 3d(x_1, x_4) + 3d(x_4, x_2)
\end{aligned}$$

$$\begin{aligned}
&= d(x_1, x_2) + d(x_1, x_1) + d(x_1, x_3) + d(x_1, x_4) + d(x_4, x_2) + d(x_3, x_2) + d(x_4, x_1) + d(x_3, x_1) + d(x_4, x_3) + d(x_3, x_3) + d(x_4, x_4) \\
&= d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4) + d(x_4, x_2) + d(x_3, x_2) + d(x_4, x_1) + d(x_3, x_1) + d(x_4, x_3) + d(x_3, x_4) \\
&= d(x_1, x_2) + 2d(x_1, x_3) + 2d(x_1, x_4) + d(x_4, x_2) + d(x_3, x_2) + 2d(x_4, x_3) \\
&= 2d(x_1, x_2) + 4d(x_1, x_4) + 3d(x_4, x_2)
\end{aligned}$$