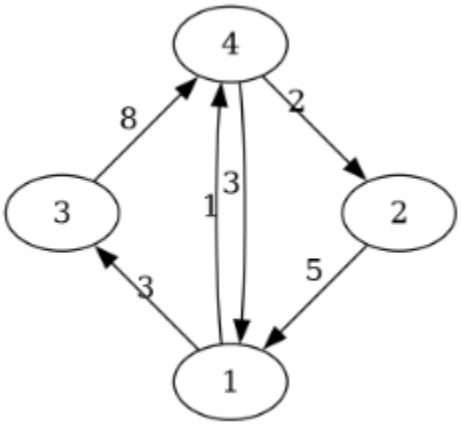
(5) Find the minimum cost of paths between any pair of verticies in the following graph. Assume every vertex has loops of length 0 (not shown).



$$W = \begin{pmatrix} 0 & \infty & 3 & 1 \\ 5 & 0 & \infty & \infty \\ \infty & \infty & 0 & 8 \\ 3 & 2 & \infty & 0 \end{pmatrix}$$

$$W^{\odot 2} = \begin{pmatrix} 0 & 3 & 3 & 1 \\ 5 & 0 & 8 & 6 \\ 11 & 10 & 0 & 8 \\ 3 & 2 & 6 & 0 \end{pmatrix}$$

$$W^{\odot 3} = \begin{pmatrix} 0 & 3 & 3 & 1 \\ 5 & 0 & 8 & 6 \\ 11 & 10 & 0 & 8 \\ 3 & 2 & 6 & 0 \end{pmatrix}$$

The matrix $W^{\odot 3}$ has entries with the lengths of the shortest paths between pairs of matricies.