Clustering of data sets must often be based on measurements taking place in ordered structures more general than the non-negative reals. This leads naturally to the study of residuated mappings from poset $P$ to poset $Q$, and generalizations thereof. When the posets are complete lattices, we study the residuated approximation $\rho_f$ of a map $f: P \to Q$; $\rho_f$ is the largest residuated mapping dominated by $f$. If $P$ is a completely distributive lattice we give a formula showing how $\rho_f$ may be calculated from $f$; and, in the finite case, present an algorithm for computing $\rho_f$. This formula, the algorithm, and other results are based on the study of the mappings $f^{(+)}$ and $f^{(-)}$ defined (when possible) for $q \in Q$ by $f^{(+)}(q) = \bigvee \{ p \in P : f(p) \leq q \}$, and dually $f^{(-)}(q) = \bigwedge \{ p \in P : f(p) \geq q \}$. If $k \leq f$ is residuated, then $k \leq f^{(+)(-)} = (f^{(+)})(-) = \sigma_f$. The map $\sigma_f$ is called the shadow of $f$. It was introduced and studied in 1988 by H. Andréka, R. J. Greechie, and G. E Strecker. (Received September 18, 2005)