Name:_____

Q1. The following table gives a list of a few different relations on various sets.
Which of the relations are transitive? reflexive? symmetric? equivalence? Mark an X in the column if that relation is of the type indicated.

Q2. For those which are equivalence relations, give an example of an equivalence class (i.e., choose an element x of the set, and write a list of all the elements equivalent to x, or a formula for all the elements if this is an infinite set).

Q3. For those which are equivalence relations, in the last column of the table, write down the number of equivalence classes (this could be infinite.) **Repeat:** Only answer the last column if you have an equiv. rel.

Note: While I'm not asking for proofs here, you should be prepared to give a clear mathematical argument why a box is checked or unchecked.

	Set	Relation	Trans-itive	Relex-ive	Sym-metric	Equival-ence	Classes – Use this space to make clear that you know what the equivalence classes are. Give enough examples to convince me that you know.
1	$\mathbb{R}$	$aRb \iff a - b < 0$					
2	$\mathbb{Z}$	$aRb \iff a - b$ is even					
3	$\mathbb{R}$	$aRb \iff |a| = b$					
4	$\mathbb{R}$	$aRb \iff |a| = |b|$					
5	$\mathbb{R}$	$aRb \iff |a|b = a|b|$					
6	$\mathbb{Z}$	$aRb \iff |a| - |b|$ is even					
7	$\mathbb{Z}$	$aRb \iff a|b$					
8	$\mathbb{Z}\backslash\{0\}$	$aRb \iff ab$ is a square in $\mathbb{Z}$					
9	$\mathbb{R}\backslash\{0\}$	$aRb \iff ab$ is a square in $\mathbb{R}$					

Each relation in this table is a relation on a given set, listed under "set".