CS205- Summer 2012
Quiz 6 Name: _____

Show all work clearly and in order, and circle your final answers. Justify your answers algebraically whenever possible; when you do use your calculator, sketch all relevant graphs and write down all relevant mathematics. You have 15 minutes to take this 15 point quiz.

Important: Only final answers written in the blank will receive points,

1. (*10 points*) $(2 + 2 + 1 \times 6)$ Fill in the blanks,

1. How many relations are there on the set $\{a, b, c, d\}$? 2^{16}
2. How many relations are there on the set $\{a, b, c, d\}$ that contain the pair (a, a)? 2^{15}
3. Consider the relation R = {(2, 2), (2, 3), (2, 4), (3, 2), (3, 3), (3, 4)} on the set $A = \{1, 2, 3, 4\}$. Is it ?
   (a) reflexive? F
   (b) irreflexive? F
   (c) symmetric? F
   (d) antisymmetric? F
   (e) asymmetric? F
   (f) transitive? T

2. (*5 points*) Let R be the relation $\{(a, b)$, such that a divides $b\}$ on the set of integers. What is the symmetric closure of R?

Final answer here: $R \cup R^{-1} = \{(a, b) : a|b \text{ or } b|a\}$