Quiz 3

Engineering 3422, 2004

Wednesday Nov 17, 2004

Name _____

Q0. Find a closed form solution for the sequence defined by:

$$
\begin{aligned}
a(0) &= 3 \\
a(1) &= 1 \\
a(n) &= -a(n-1) + 6 \cdot a(n-2)
\end{aligned}
$$

Q1. Suppose that $\mathrm{dom}(S) = \mathrm{rng}(R)$. Show that if S and R are both total relations, then so is $S \circ R$.

Q2. Let S and R be relations with domain and range both equal to $\{0, 1, 2, 3, 4, 5\}$. Define the graphs by

$$xRy \text{ iff } y = x \bmod 3$$
$$xSy \text{ iff } y = (x + 1) \bmod 6$$

List all the members of the graph of $S \circ R$?
$\mathrm{graph}(S \circ R) = \{$