Here is the review sheet that we used in class today. Any of these topics is fair game for the (non-programming part of) the exam.

1. Techniques of simulating physical systems: Euler method, Euler-Cromer method

Cellular Automata
 1-dimensional, 2-dimensional automata
 The Game of Life

3. Neural Networks

Basic construction of neural networks (artificial neurons connected by weighted edges)

"Standard" neural network: layered, feedforward network with "input", "output", and (at least one) "hidden" layer

Training neural networks by adjusting weights to reduce error of the output layer

4. Boolean Networks Basic construction of Boolean networks Behavior of Boolean networks: cycles, states that lead into cycles

5. Fractals Self-similar shapes Similarity dimension of self-similar shapes

6. Turing test Objections to the Turing test (from Turing's paper) Searle's "Chinese Room" thought experiment

7. Machine vision
Binocular depth perception, and the use of disparity as a key quantity in determining the distance of an object or point
Constraint propagation as a technique for finding convex, concave, and boundary edges within a scene
Geons as "geometric primitives" used for recognizing shapes

8. Context-free grammars as models of natural language

Context-free grammars as collections of "expansion rules" in which

non-terminals are expanded to sequences of non-terminals and terminals.

Using a context-free grammar to parse a sentence

NOTE: Readings are also fair game! (Hinton, Gardner, Turing, Pinker)

ALSO NOTE: Exam is open notes, open readings. You might want to bring a calculator as well; but *NO* computers.