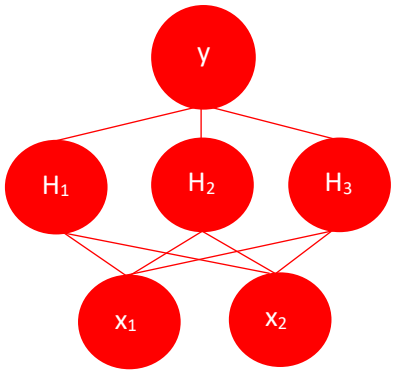
DNSC 6279 Name:
Quiz 05

1. **(6 pts.)** Draw as an undirected graph diagram the neural network that the equations below define:

$y = w_{40} + w_{41}*H_1 + w_{42}*H_2 + w_{43}*H_3,$
$H3 = \tanh(w_{30} + w_{31}*x_1 + w_{32}*x_2),$
$H2 = \tanh(w_{20} + w_{21}*x_1 + w_{22}*x_2),$
$H1 = \tanh(w_{10} + w_{11}*x_1 + w_{12}*x_2)$



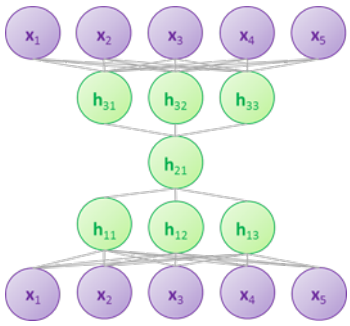
2. **(1 pt.)** Based on the equations used to define the neural network, would this neural network be best suited for **regression** or **classification**? (**HINT:** Think about the activation function – or lack thereof – for the output unit.)

Regression
(The output unit is unbounded, can take on any value (+inf, -inf))

3.) **(1 pt.)** What is the name of this type of neural network?

Multilayer perceptron (½ pt. for "feed-forward" or "supervised")

Use the autoencoder neural network below to answer the following questions:



3.) **(1/2 pt.)** How many hidden layers does the autoencoder network have?

3

4.) **(1/2 pt.)** How many hidden units does the autoencoder network have?

7

5.) **(1 pt.)** Name an application for an autoencoder neural network.

Any of: dimension reduction, feature extraction, unsupervised learning, data visualization, anomaly detection, outlier detection or similar.