## Physics 342, Homework 3

1: 2-25 (medium) - Hint - The force being asked for in parts a and b is the normal force. Don't forget the acceleration is centripetal so $m \vec{a}$ needs to be put in the proper form. SKIP D

2: 2-26 (short) - straightforward
3: 2-41 (short) - straightforward
4: 2-43 (medium to short) - graph this potential. Remember total energy is $1 / 2 m v^{2}+U(x)$, I want what happens to a particle depending on it's location and the potential there.

5: 2-47 (short) easy if you remember ow to graph functions from calc 1.
6: 2-48 (short) trivial if you think a bit.
7: (potentially long, work in groups if you like) By hook or crook generate the graph in figure 2-9 by solving equation 2.45 numerically then inserting the numerical result into equation 2.43 . Appendix H in the book gives the pseudocode used to generate the plot as well as the values used for $\mathrm{U}, \mathrm{V}, \mathrm{k}$, etc. You should find that for $\mathrm{k}=0 \mathrm{t}=106$ seconds using these values. You may use Excel and code a root finder as shown in class or matlab/maple with built in root finders, or basically any method you like.

