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F



Potential Energy Graphs

200

U

(J)

- 2. Imagine the potential energy function for a 3 kg object looks like the following:
 - a. Graph the force.
 - b. Where could the object have zero speed, and be in neutral equilibrium?
 - F (N) x (m) 8
 - c. In which direction is the force on the object between 0 and 2 m?
 - d. In which direction is the force on the object between 4 and 6 m?
 - e. If the object had a total mechanical energy of 50 J, where could it be?
 - f. If the object had a total mechanical energy of 100 J, where could the object be?
 - g. If the object had total mechanical energy of 100 J, what is the range of possible kinetic energies the object could have?

NAME:

Potential Energy Graphs

- 3. Imagine the potential energy function for an object looks like the following: (Assume that the dashed axes line up with inflection points, maxima or minima.
 - a. Sketch the force function.
 - b. Mark where the object could be in equilibrium and label whether it is stable, unstable or neutral.
 - c. Mark the region where the object could possibly be oscillating back and forth?
 - d. What is the maximum energy the object could have, and be oscillating back and forth?
 - e. What is the maximum kinetic energy the object could have if it was oscillating back and forth?
 - f. If the object had 6000 J of total mechanical energy, where could the object be located and what could the object be doing?

Answers:

1. a) $F=-18$ b) $F=-100x$ c) $F=k/x^2$ d) $F=-b/x^2$	1. a) F=–18	b) F=–100x	c) F=k/x²	d) F=-b/x²	
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2. b) 2-4 & 6-8 c) right d) left e) 2-4

3. d) 8000 J e) 6000 J

f) either oscillating or moving to the right (if left, would stop and turn around.)



f) 0-4.67

g) 0-50 J