Name: _____ Recitation Instructor: _____

A metal ball ($m = 1.9$ kg) **hangs by a light string from the** ceiling of a wooden crate ($M = 5.2$ kg). The crate is then pushed with a constant horizontal force F along some friction-less ice. This causes the ball hang inside the crate at an angle of $\theta = 40°$ with respect to the vertical. What is the value of F ?(Hint: if the ceiling of the crate is pulling on the ball, then the ball is pulling back on the ceiling of the crate.) For the limit check, investigate what happens to F as the angle θ drops to zero.

Representation:	0	1	2
Physics Concept(s):	0	1	2
Initial Equation(s):	0	0.5	1
Symbolic Answer:	0		1
Units Check:	0	0.5	1
Limits Check:	0	0.5	1
Neatness:	-2	-1	0
Total:			
Correct Answer:	Y	N	

_____

Representation

Physics Concept(s) (Refer to the list posted on Carmen)   Initial Equations

(1) _____

↓ Show Your Equation Work On Next Page ↓

Symbolic Answer:

Units Check

Limits Check

a) As $\theta \to 0°$, what limit does F approach?

b) Why does the result make physical sense?

Numerical Answer: (Obtain this by plugging numbers into your symbolic answer.)