This print-out should have 10 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Holt SF 04A 02

001 (part 1 of 4) 10.0 points

A crate is pulled to the right with a force of 80.3 N, to the left with a force of 123.5 N, upward with a force of 618.7 N, and downward with a force of 248.4 N.

What is the net external force in the x direction?

Correct answer: −43.2 N.

002 (part 2 of 4) 10.0 points

What is the net external force in the y direction?

Correct answer: 370.3 N.

003 (part 3 of 4) 10.0 points

What is the magnitude of the net external force on the crate?

Correct answer: 372.811 N.

004 (part 4 of 4) 10.0 points

What is the direction of the net external force on the crate (as an angle between -180° and 180°, measured from the positive x axis with counterclockwise positive)?

Correct answer: 96.6542°.

Sum of Three Vectors 02

005 (part 1 of 2) 10.0 points

Consider three force vectors $\vec{F}_1$ with magnitude 35 N and direction 140°, $\vec{F}_2$ with magnitude 33 N and direction -130°, and $\vec{F}_3$ with magnitude 18 N and direction 110°. All direction angles θ are measured from the positive x axis: counter-clockwise for $\theta > 0$ and clockwise for $\theta < 0$.

What is the magnitude F of the net force vector $\vec{F} = \vec{F}_1 + \vec{F}_2 + \vec{F}_3$?

Correct answer: 55.9928 N.

006 (part 2 of 2) 10.0 points

What is the direction of $\vec{F}$ as an angle between the limits of -180° and $+180^\circ$ from the positive x axis with counterclockwise as the positive angular direction.

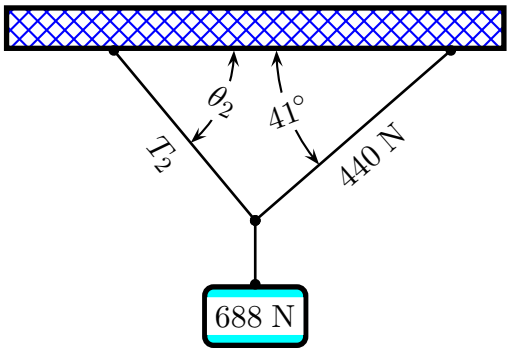
Correct answer: 165.38°.

Hanging Weight 04

007 (part 1 of 2) 10.0 points

Consider the 688 N weight held by two cables shown below. The left-hand cable had tension T_2 and makes an angle of θ_2 with the ceiling. The right-hand cable had tension 440 N and makes an angle of 41° with the ceiling.

The right-hand cable makes an angle of 41° with the ceiling and has a tension of 440 N .



a) What is the tension T_2 in the left-hand cable slanted at an angle of θ_2 with respect to the wall?

Correct answer: 519.365 N.

008 (part 2 of 2) 10.0 points

b) What is the angle θ_2 which the left-hand cable makes with respect to the ceiling?

Correct answer: 50.2543°.

Holt SF 07I 01

009 10.0 points

Two balls, each with a mass of 0.881 kg, exert a gravitational force of 8.19×10^{-11} N on each other.

How far apart are the balls? The value of the universal gravitational constant is $6.673 \times 10^{-11}\ \mathrm{N\,m^2/kg^2}$.

Correct answer: 0.795233 m.

AP B 1993 MC 48
010 10.0 points

The planet Krypton has a mass of 7×10^{23} kg and radius of 3.6×10^{6} m.

What is the acceleration of an object in free fall near the surface of Krypton? The gravitational constant is 6.6726×10^{-11} N $\cdot$ m^2/kg^2.

Correct answer: 3.60403 m/s^2.