

FORCES AND OBJECTS ON INCLINED PLANES

1. Consider a 10-kg object on 3 different inclined planes (3° , 38° and 70°).
 - a) Find \vec{F}_g , $\vec{F}_{g//}$, \vec{F}_N , \vec{F}_f and \vec{F}_{net} for each plane provided that the coefficient of friction between the surfaces of contact is 0.2
 - b) Decide whether the object is moving or at rest. If it is at rest find the magnitude and direction of an applied force that is needed to accelerate the object. If you find that the object is not at rest, find its acceleration.

2. Consider an object of 50 kg that is placed on a 15° inclined plane.
 - a) Is the object stationary if the surfaces of contact are frictionless? If not, find the object's acceleration.
 - b) If μ is 0.3 find the net force and decide whether the object accelerates. If it does not accelerate state what is required for the object to accelerate.

3. Consider a 20-kg object that is pushed with 100 N force at 20° angle down an inclined plane that is elevated 30° above horizontal. The coefficient of friction is 0.15. Find the magnitude of \vec{F}_g , $\vec{F}_{g//}$, \vec{F}_N , \vec{F}_f , \vec{F}_{net} and \vec{a} .