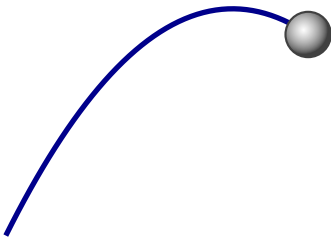
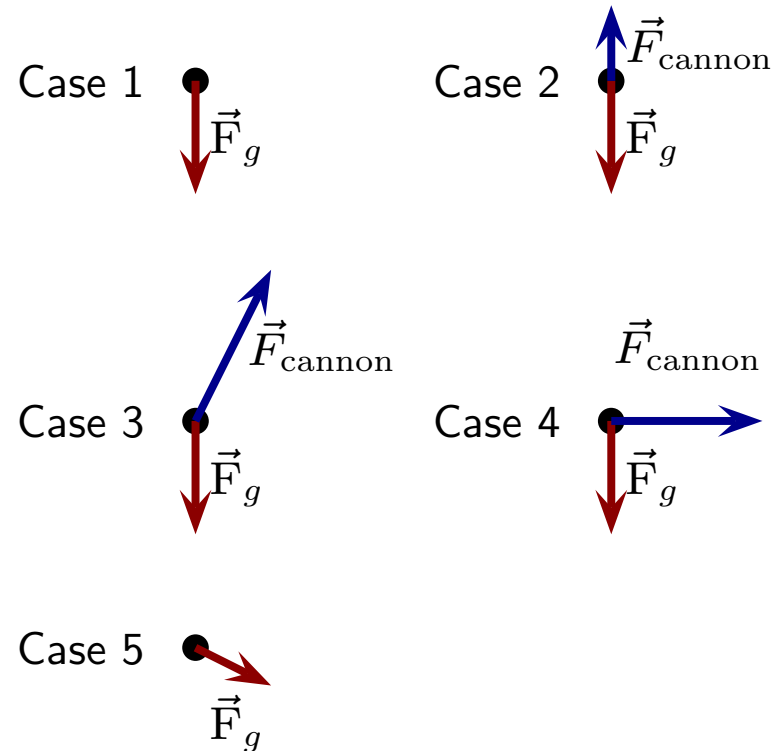


Question 1

A cannonball is fired from a cannon and it follows the illustrated trajectory.

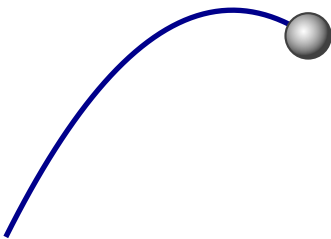


Ignoring air resistance, which of the following illustrates the forces acting on the cannonball *while the cannonball is being fired by the cannon?*

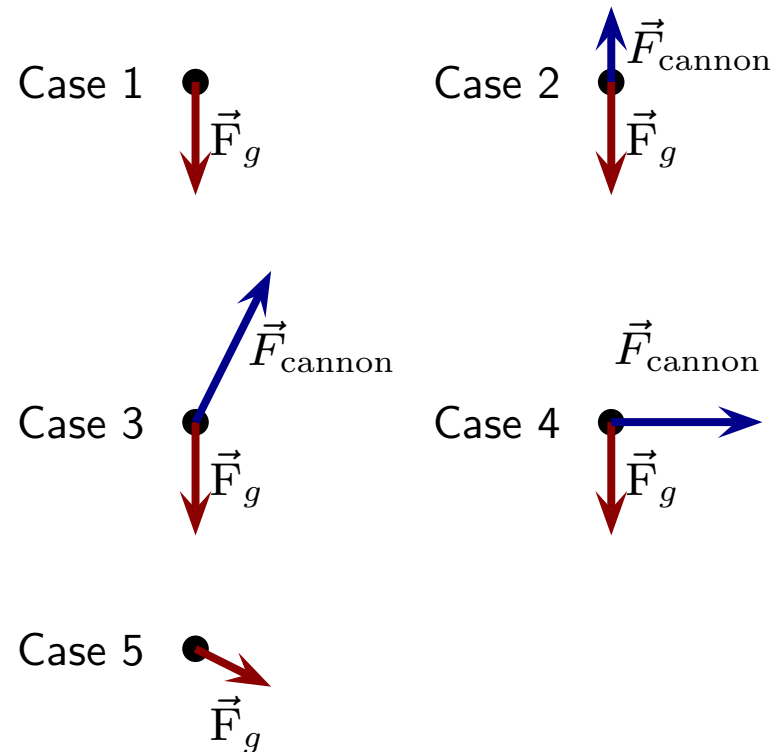


Question 2

A cannonball is fired from a cannon and it follows the illustrated trajectory.



Ignoring air resistance, which of the following illustrates the forces acting on the cannonball *at the illustrated instant*?

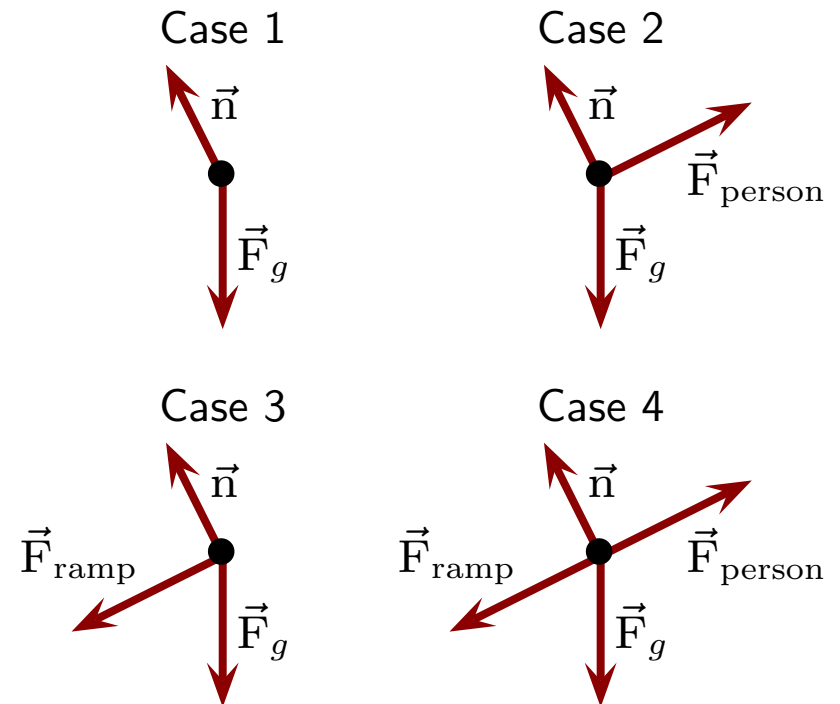


Question 3

A sled can move along the illustrated frictionless surface. A person pushes it along the horizontal section and loses contact with the sled before the bottom of the ramp. It slides up the ramp.



Which of the following represents the FBD for the sled as it moves up the ramp?

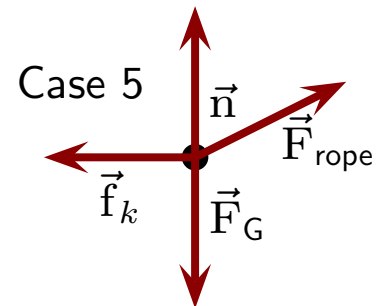
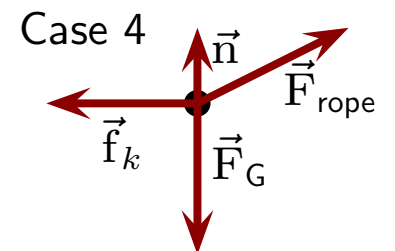
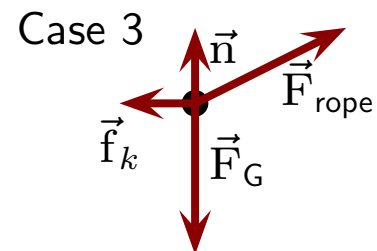
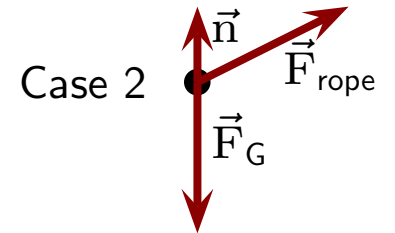


Question 4

A box is pulled across the floor with a rope as illustrated. The box slides with constant velocity.

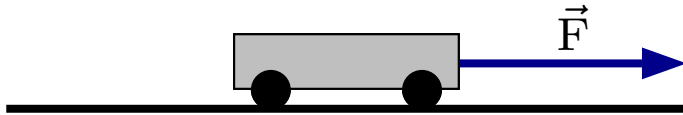


Which of the following (\vec{f}_k represents friction) best represents the free body diagram for the box?



Question 5

A 1 kg cart moving along a horizontal surface is acted on by one force that constantly pulls from the right. The earth's gravitational force is irrelevant here and friction can be ignored.



The cart is initially at rest and after 2 s it reaches a velocity of 8 m/s.

The same force is applied to a cart with the same mass, but initially moving with velocity 4 m/s right. The force is applied for 2 s. The velocity of this cart after 2 s is (choose one):

1. 8 m/s
2. 12 m/s
3. 16 m/s
4. 32 m/s