

# Question 1

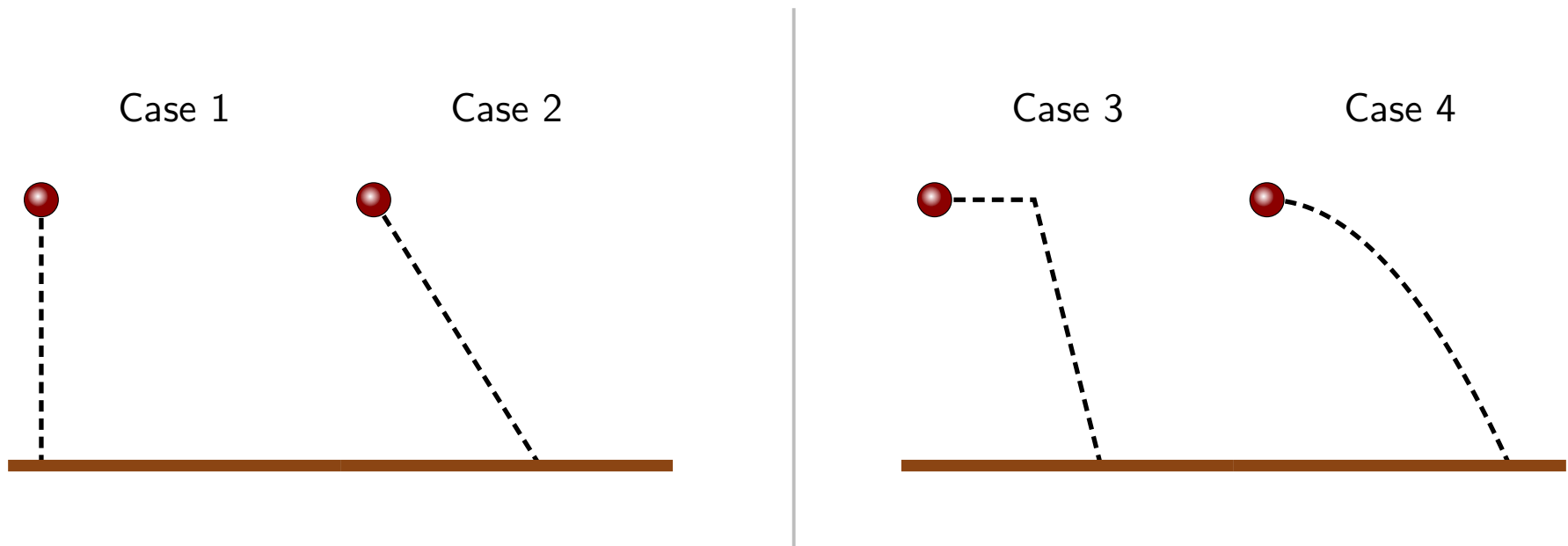
The Moon orbits Earth in a circle. To do this Earth must exert a force on the Moon. Could this be the same force that Earth exerts on a ball that falls to Earth's surface?

Consider the force exerted by Earth on the Moon. Which of the following applies?

1. The force exerted by Earth on the Moon *is definitely* the same type of force that Earth exerts on a falling ball.
2. The force exerted by Earth on the Moon *might be* the same type of force that Earth exerts on a falling ball.
3. The force exerted by Earth on the Moon *could not be* the same type of force that Earth exerts on a falling ball. If it were the Moon would fall to the Earth.

## Question 2

A ball is thrown near to the earth's surface in so that, at the instant at which it leaves the hand, it moves horizontally. Which of the following illustrates the ball's trajectory as it moves to the Earth?



## Question 3

Suppose that a cannonball is fired from a cannon on top of a mountain higher than all others. The cannon points horizontally and can fire the cannonball at various speeds.

Ignoring air resistance, what happens to the cannonball as the launch speed increases?

1. It always hits Earth at the same location.
2. It always hits Earth but at a further distance when fired faster.
3. It can avoid hitting Earth completely.

## Question 4

The Earth exerts a gravitational force on an apple near to its surface.

Which of the following is true?

1. Only really heavy objects can exert gravitational forces so the apple does not exert any force on Earth.
2. The apple exerts a force on Earth but this is much less than the force exerted by the Earth on the apple.
3. The apple exerts a force on Earth and this has the same size as the force exerted by the Earth on the apple.
4. The apple can exert gravitational forces but only on smaller objects.

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