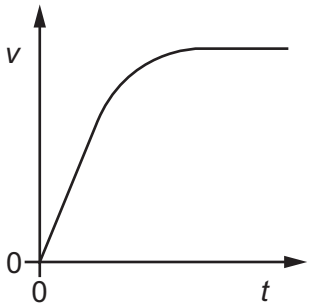
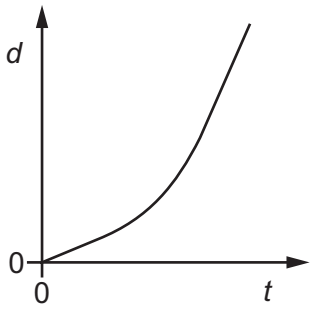
7 A sky-diver falls vertically from a helicopter and reaches constant (terminal) velocity. The graph shows the variation with time t of the speed v of the sky-diver.

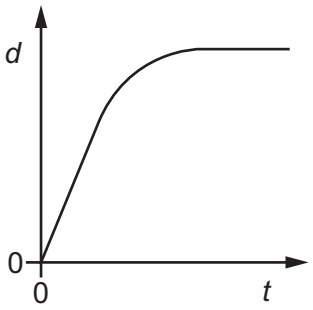


Which graph shows the variation with time t of the distance d fallen by the sky-diver?

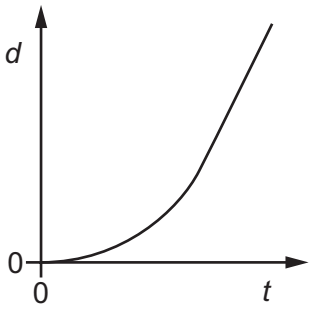
A



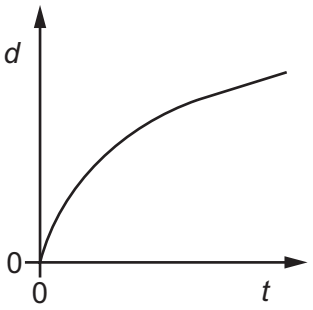
B



C



D



8 A tennis ball of mass 55 g is travelling horizontally with a speed of $30\,m\,s^{-1}$. The ball makes contact with a wall before rebounding in the horizontal direction with a speed of $20\,m\,s^{-1}$. The ball is in contact with the wall for a time of 5.0×10^{-3} s.

What is the average force exerted on the wall by the ball?

A 110 N **B** 220 N **C** 330 N **D** 550 N

9 An elastic collision occurs between two bodies X and Y. The mass of body X is m and the mass of body Y is $4m$. Body X travels at speed v before the collision and speed $\frac{3v}{5}$ in the opposite direction after the collision. Body Y is stationary before the collision.

What is the kinetic energy of body Y after the collision?

A $\frac{8}{10}mv^2$ **B** $\frac{34}{50}mv^2$ **C** $\frac{16}{50}mv^2$ **D** $\frac{1}{5}mv^2$