

4. **WE16** A rocket fired from Earth travels in a parabolic path. The equation for the path is $h = -0.05d^2 + 4d$, where h is the height in **km** above the surface of the earth and d is the horizontal distance travelled in **km**.
- Find the height of the rocket after:
 - 30 **km**
 - 60 **km**.
 - How far away does the rocket land?
 - What is the maximum height of the rocket and how far did it travel before it reached this height?
 - Sketch the path of the rocket.

5. The height of a golf ball hit from the top of a hill is given by the quadratic rule $h = -t^2 + 5t + 14$, where h is in metres and t in seconds.
- From what height was the golf ball hit?
 - What was the height of the ball after 2 seconds?
 - When does the golf ball hit the ground?
 - What is the maximum height the ball reaches?
 - Sketch the graph of the flight of the ball.

11. The height, h metres, of a model rocket above the ground t seconds after launching is given by the equation $h = 4t(50 - t)$ for $0 \leq t \leq 50$.

- a. Sketch the graph of the rocket's flight.
- b. Determine the height of the rocket when it is launched.
- c. What is the greatest height the rocket reaches?
- d. After how long does the rocket reach the greatest height?
- e. How long is the rocket in the air?