

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- The highest power is 1: **linear**.

2.2

- $x^2 = 16$ at a root: $x = -4, 4$.

2.3

- Negative square term means **downwards**; at $x = 0$, $(0, 9)$.

2.4

- Take the midpoint: $x = (-2 + 6)/2 = 2$, so $x = 2$.

3.1

(a)

- $x^2 = 4$, so $x = -2, 2$.

(b)

- At $x = 0$, $y = 4$, so $(0, 4)$. Symmetry is $x = 0$.

(c)

- **Downward smooth curve through** $(-2, 0)$, $(0, 4)$, $(2, 0)$, symmetric about the y -axis.

3.2

(a)

- The roots are **-3 and 3** .
- The y -intercept is **$(0, -9)$** and symmetry is **$x = 0$** .
- Draw a smooth upward-opening U-shape through the labelled crossings.

(b)

- The line has x -intercept **$(2, 0)$** and y -intercept **$(0, -6)$** .
- Draw the straight line through them.
- The quadratic has two crossings because $x^2 = 9$ has positive and negative roots; the nonhorizontal line has one.