Solving Quadratics Graphically – Example Method

The graph shows the function:

\[ y = 2x^2 + x - 6 \]

1. Use the graph to estimate solutions to the equation \( 2x^2 + x - 6 = 0 \)

Since changing \( y \) to 0 in the original graph equation gives \( 0 = 2x^2 + x - 6 \), we need to find out where the curve crosses the line \( y = 0 \) (that is, the \( x \)-axis):

\[ x = -2 \quad \text{and} \quad x = 1.5 \]

2. Use the graph to estimate solutions to the equation \( 2x^2 + x - 6 = -2 \)

Since changing \( y \) to \(-2\) in the original graph equation gives \(-2 = 2x^2 + x - 6\), we need to find out where the curve crosses the line \( y = -2 \) (that is, a horizontal line through \(-2\) on the \( y \)-axis):

\[ x = -1.7 \quad \text{and} \quad x = 1.2 \]