

Solutions

2.1 Factorise to $(x-3)(x-7)=0$. The smaller root is 3.

2.2 The factorised roots are 3 and 7; the larger is 7.

2.3 Substitute 5: $(5-3)(5-7)=2 \times (-2)=-4$.

2.4 The discriminant is $(-6)^2-4 \times 1 \times 9=0$.

2.5 Complete the square: $x(10-x)=25-(x-5)^2$. The maximum is 25.

3.1 False. $x^2-1=0$ has discriminant $4>0$ and two distinct real roots, -1 and 1 . A negative discriminant means no real roots.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.