Converting quadratic forms

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Expand $(x-4)(x+2)$. [2 marks]

Multiply and collect the middle terms.

Answer: x^2-2x-8

2. Factorise x^2+2x-8. [2 marks]

Use product -8 and sum 2.

Answer: $(x+4)(x-2)$

3. Write x^2+2x-8 in vertex form. [2 marks]

Add/subtract 1.

Answer: $(x+1)^2-9$

4. Convert $-2(x-3)^2+8$ to expanded/factored forms. [3 marks]

Expand carefully.

Solve $(x-3)^2=4$ for roots 1,5.

Answer: $-2x^2+12x-10=-2(x-1)(x-5)$

5. Roots are -1 and 3 and the graph passes through (0,-6). Find the quadratic. [3 marks]

Use $y=a(x+1)(x-3)$.

Substitute (0,-6) to get a=2.

Answer: $y=2(x+1)(x-3)$

6. Can x^2+4 factorise into real linear factors? Explain. [2 marks]

Its discriminant is -16, so there are no real roots.

A real linear factor would supply a real root.

Answer: No.