

9 Assume that  $a$  and  $b$  are integers such that

$$a^2 - 4b - 2 = 0$$

9 (a) Prove that  $a$  is even.

[2 marks]

9 (b) Hence, prove that  $2b + 1$  is even and explain why this is a contradiction.

[3 marks]

9 (c) Explain what can be deduced about the solutions of the equation

$$a^2 - 4b - 2 = 0$$

[1 mark]