Proof By Contradiction (From Edexcel Sample Papers)

1. Use proof by contradiction to show that, given a rational number a and an irrational number b, $a - b$ is irrational.

(4 marks)

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2. Use proof by contradiction to prove the statement: 'The product of two odd numbers is odd.'

(5 marks)

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3. Prove by contradiction that if n is odd, $n^3 + 1$ is even.

(5 marks)

4.

   a. Use proof by contradiction to show that if n^2 is an even integer then n is also an even integer.

(4 marks)

   b. Prove that $\sqrt{2}$ is irrational.

(6 marks)

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5. Use proof by contradiction to show that there is no greatest positive rational number.

(4 marks)

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6. Use proof by contradiction to show that there exist no integers a and b for which $25a + 15b = 1$.

(4 marks)
