

## Non-Calculator

### Q1.

A sequence of numbers is formed by the iterative process  $a_{n+1} = (a_n)^2 - a_n$

- (a) Describe the sequence of numbers when  $a_1 = 1$   
Show working to justify your answer.

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(1)

- (b) Describe the sequence of numbers when  $a_1 = -1$   
Show working to justify your answer.

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(2)

- (c) Work out the value of  $a_2$  when  $a_1 = 1 - \sqrt{2}$

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

## Calculator

**Q2.**

$P$  is the principal amount.

$r$  is the interest rate over a given period.

$n$  is the number of times that the interest is compounded.

Circle the expression for the total accrued using compound interest.

$$P\left(1 + \frac{r}{100}\right)^n \quad P + \left(\frac{r}{100}\right)^n$$

$$P\left(1 + \frac{n}{100}\right)^r \quad P\left(1 + \frac{r^n}{100}\right)$$

**(Total 1 mark)**

**Q3.**

On 1st January 2012 Beth invested some money in a bank account.

The account pays 2.5% compound interest per year.

On 1st January 2013 Beth withdrew £1000 from the account.

On 1st January 2014 she had £17 466 in the account.

Work out how much money Beth originally invested in the account.

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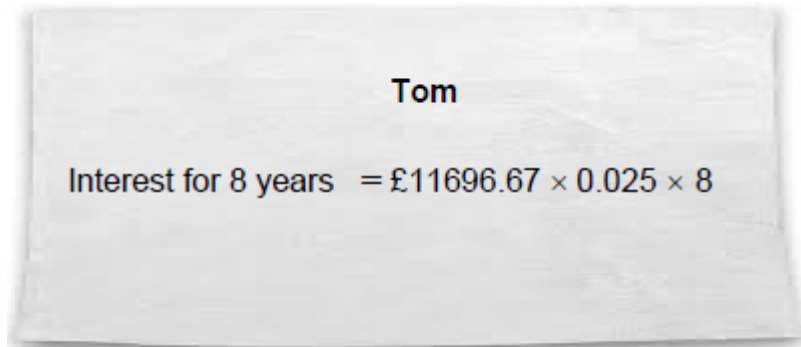
Answer £.....

**(Total 4 marks)**

**Q4.**

An amount of money was invested for 8 years.  
It earned **compound** interest at 2.5% per year.  
After 8 years the total value of the investment was £11 696.67

- (a) Tom is trying to work out the total interest earned.



State what is wrong with Tom's method.

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(1)

- (b) Work out the total interest earned.

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Answer £ \_\_\_\_\_

(3)

(Total 4 marks)