# Solutions to the 2023 VCAA sample questions

## **Specialist Mathematics Examination 2**

**Question 1** 

Consider the following statement.

P Q

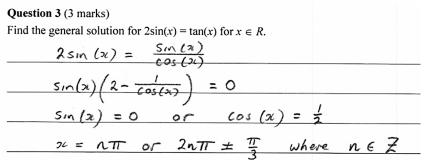
'For all integers *n*, if  $n^2$  is even, then *n* is even.'

- Which one of the following is the contrapositive of this statement? **A.** For all integers n, if  $n^2$  is odd, then n is odd.
- **B.** There exists an integer *n* such that  $n^2$  is even and *n* is odd.
- C. There exists an integer *n* such that *n* is even and  $n^2$  is odd.
- **(D.)** For all integers *n*, if *n* is odd, then  $n^2$  is odd.
- **E.** For all integers *n*, if *n* is even, then  $n^2$  is even.

Note: the contrapositive of  $P \Rightarrow Q$  is (not Q)  $\Rightarrow$  (not P)

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### Mathematical Methods Examination 1



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#### **General Mathematics Examination 1**

#### Question 21

Ray deposited \$7000 in an investment account earning interest at the rate of 3% per annum, compounding quarterly.

A rule for the balance,  $R_n$ , in dollars, after *n* years is given by

A. 
$$R_n = 7000 \times 0.03^n$$
  
B.  $R_n = 7000 \times 1.03^n$   
C.  $R_n = 7000 \times 0.03^{4n}$   
D.  $R_n = 7000 \times 1.0075^n$   
(E.)  $R_n = 7000 \times 1.0075^{4n}$   
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