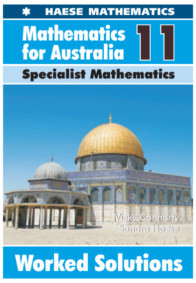


ERRATA

MATHEMATICS FOR AUSTRALIA 11

Specialist Mathematics

Worked Solutions

First edition - 2016

The following errata was made on 11/May/2020

page 247 **EXERCISE 6E,** question **2** should read:

2 P_n is: The product of n odd integers is odd for all $n \in \mathbb{Z}$, $n \geqslant 2$.

Proof: (By the principle of mathematical induction)

(1) Let p_1 and p_2 be odd integers.

Then there exist $q_1, q_2 \in \mathbb{Z}$ such that $p_1 = 2q_1 + 1$ and $p_2 = 2q_2 + 1$.

$$\begin{aligned} \text{Now} \quad p_1 p_2 &= (2q_1 + 1)(2q_2 + 1) \\ &= 4q_1 q_2 + 2q_1 + 2q_2 + 1 \\ &= 2(2q_1 q_2 + q_1 + q_2) + 1 \quad \text{which is odd.} \end{aligned}$$

$\therefore$ P_2 is true.

(2) If P_k is true, then the product of k odd integers is odd.

Let $p_1, p_2, ..., p_k$, and p_{k+1} be odd integers.

Then there exist $q, r \in \mathbb{Z}$ such that $p_1 p_2 .... p_k = 2q + 1$ {using P_k}
and $p_{k+1} = 2r + 1$

$$\begin{aligned} \text{Now} \quad p_1 p_2 .... p_k p_{k+1} &= (2q + 1)(2r + 1) \\ &= 4qr + 2q + 2r + 1 \\ &= 2(2qr + q + r) + 1 \quad \text{which is odd.} \end{aligned}$$

$\therefore$ P_{k+1} is also true.

Since P_2 is true, and P_{k+1} is true whenever P_k is true,
P_n is true for all $n \in \mathbb{Z}$, $n \geqslant 2$. {principle of mathematical induction}

The following erratum was made on 28/Apr/2020

page 85 **EXERCISE 3L,** question **3 a ii** should read:

3 a i $\overrightarrow{PC} = \overrightarrow{AP} = \mathbf{r}$, $\overrightarrow{DP} = \overrightarrow{PB} = \mathbf{s}$

ii $\overrightarrow{AB} = \overrightarrow{AP} + \overrightarrow{PB}$, $\quad \overrightarrow{DC} = \overrightarrow{DP} + \overrightarrow{PC}$

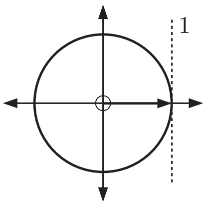
$= \mathbf{r} + \mathbf{s}$ $\qquad \qquad = \mathbf{s} + \mathbf{r}$

$\qquad \qquad \qquad \qquad = \mathbf{r} + \mathbf{s}$

The following errata were made on 21/Feb/2020

page 136 **EXERCISE 4I,** question **2 a** text alongside second diagram should read:

2 **a**

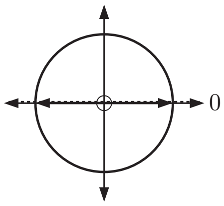


$\cos x = 1$ when
$x = 0$ or 2π
$\{0 \leqslant x \leqslant 2\pi\}$

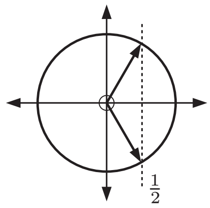
$\therefore \quad x = 0, \frac{2\pi}{3}, \frac{4\pi}{3},$ or 2π.

page 137 **EXERCISE 4I,** question **2 d** text alongside diagrams should read:

2 **d** $\therefore \quad \sin 2x = 0$ or $\cos 2x = \frac{1}{2}$



$\sin 2x = 0$ when
$2x = 0, \pi, 2\pi, 3\pi,$
or 4π
$\{0 \leqslant 2x \leqslant 4\pi\}$



$\cos 2x = \frac{1}{2}$ when
$2x = \frac{\pi}{3}, \frac{5\pi}{3}, \frac{7\pi}{3},$
or $\frac{11\pi}{3}$
$\{0 \leqslant 2x \leqslant 4\pi\}$

$\therefore \quad 2x = 0, \frac{\pi}{3}, \pi, \frac{5\pi}{3}, 2\pi, \frac{7\pi}{3}, 3\pi, \frac{11\pi}{3},$ or $4\pi \quad \{0 \leqslant 2x \leqslant 4\pi\}$

page 287 **EXERCISE 7G.2,** question **3 b** last line should read:

3 **b** $= \left(\frac{z_1}{z_2}\right)^*$ for $z_2 \neq 0$ {using **a**}

The following erratum was made on 12/Jul/2019

page 289 **EXERCISE 7G.2,** question **8 b** does not require a to not be equal to -1:

8 **b** w is purely imaginary if
$a^2 - b^2 - 1 = 0$ and $2ab \neq 0$
that is, if $a^2 - b^2 = 1$
and neither a nor b is zero.