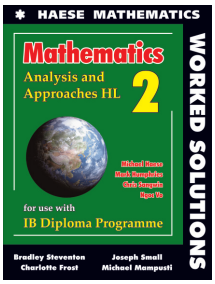

ERRATA

Mathematics: Analysis and Approaches HL

WORKED SOLUTIONS

First edition - 2020

The following errata were made on 25/Jun/2020

page 104 **CHAPTER 2 INVESTIGATION 2** Question **5**, should read:

5 $u_n = u_0 e^{rt}$, $u_0 = 1000$, $r = 0.06$, $t = 1$

$\therefore \ u_n = 1000 \times e^{0.06 \times 1}$

≈ 1061.84

The final amount is \$1061.84 .

page 166 **CHAPTER 3 INVESTIGATION 3** Question **2 c**, replace entirely with:

2 **c** From **b**, $f = 261.6 \times 2^n$

$\therefore \ n = \log_2\left(\frac{f}{261.6}\right)$

Let f_P and f_Q be the frequencies of notes P and Q respectively, where Q is one note above P. There are 12 notes in an octave, and they are evenly spaced on the logarithmic scale.

$\therefore \ \log_2\left(\frac{f_Q}{261.6}\right) - \log_2\left(\frac{f_P}{261.6}\right) = \frac{1}{12}$

$\therefore \ \log_2\left(\frac{f_Q}{f_P}\right) = \frac{1}{12}$

$\therefore \ \frac{f_Q}{f_P} = 2^{\frac{1}{12}}$

So, the ratio between the frequencies of two consecutive notes is $2^{\frac{1}{12}} : 1 \approx 1.06 : 1$.

page 1547 **EXERCISE 25D** Question **5 f**, should read:

5 **f** $e^y(2x^2 + 4x + 1)\frac{dy}{dx} = (x+1)(e^y + 3)$

$\therefore \ \frac{e^y}{e^y + 3}\frac{dy}{dx} = \frac{x+1}{2x^2 + 4x + 1}$

$\therefore \ \int \frac{e^y}{e^y + 3}\frac{dy}{dx}\,dx = \int \frac{x+1}{2x^2 + 4x + 1}\,dx$

$\therefore \ \int \frac{e^y}{e^y + 3}\,dy = \frac{1}{4}\int \frac{4x+4}{2x^2 + 4x + 1}\,dx$

$\therefore \ \ln|e^y + 3| = \frac{1}{4}\ln|2x^2 + 4x + 1| + c$

$\therefore \ \ln(e^y + 3) = \frac{1}{4}\ln|2x^2 + 4x + 1| + c \qquad \{e^y + 3 > 0 \ \text{ for all } y\}$

$\therefore \ e^y + 3 = e^c\,|2x^2 + 4x + 1|^{\frac{1}{4}}$

$\therefore \ e^y + 3 = A\sqrt[4]{|2x^2 + 4x + 1|} \qquad \{A = e^c\}$

$\therefore \ e^y = A\sqrt[4]{|2x^2 + 4x + 1|} - 3$

$\therefore \ y = \ln\left[A\sqrt[4]{|2x^2 + 4x + 1|} - 3\right]$

But $y(0) = 2$, so $2 = \ln(A - 3)$

$\therefore \ e^2 = A - 3$

$\therefore \ A = e^2 + 3$

The particular solution is $y = \ln\left[\sqrt[4]{|2x^2 + 4x + 1|}\,(e^2 + 3) - 3\right]$.

page 1722 **EXERCISE 28B** Question **15 a iv**, fourth last line should read:

15 a iv

....

$$\text{Var}(Y) = \int_{2a+1}^{2b+1} (y - \text{E}(Y))^2 \, f_Y(y) \, dy$$

$$= \int_{2a+1}^{2b+1} \tfrac{1}{2}(y - \text{E}(Y)) f_X\left(\frac{y-1}{2}\right) dy \qquad \{\text{from iii}\}$$

Let $y = 2x + 1, \quad \therefore \quad \dfrac{dx}{dy} = \tfrac{1}{2}$

When $y = 2b + 1, \quad x = b$

When $y = 2a + 1, \quad x = a$

The following erratum was made on 26/May/2020

page 1140 **REVIEW SET 18B** Question **28 c**, sign diagram should read:

28 c $f'(x) = \dfrac{e^x(x-1) - e^x(1)}{(x-1)^2}$ $\{\text{quotient rule}\}$

$= \dfrac{e^x(x-2)}{(x-1)^2}$ which has sign diagram: