

## Year 11 Advanced Errata

### Exercise 8C

Q5 (d): Answer is  $2^x \ln 2$

### Exercise 8D

Q6 (e): Answer is 9 and 27

Q11: Let  $s$  be the speed, instead of  $v$

### Exercise 9E

Q9 (b): Answer is  $\frac{36}{71}$

### Exercise 9 Review

Q3 (f): Answer is  $\frac{25}{27}$

## Year 11 Extension 1 Errata

### Exercise 2A

Q19 (a): Answer is  $x = \pm 1, \pm 2, \pm 4$

Q19 (d): Answer is  $x = -1 \pm \sqrt{3}$

P3 (b): Question should be  $(1 - \alpha_1)(1 - \alpha_2) \dots (1 - \alpha_{n-1}) = n$

### Exercise 2B

Q3: Delete the word “only”

### Exercise 2D

Q5 (a): Question should read “product of roots”

### Exercise 2 Review

Q12: Question should have parts (a) and (b) swapped. So first find the roots, and hence find the value of  $k$ .

### Exercise 3A

Q4 (f): Answer  $-\frac{1}{\sqrt{3}}$

Q9 (b): Answer  $\cos^2 A - \sin^2 B$

Q13 (c): Answer is  $-\frac{16}{63}$

Q16 (d): Answer is  $\frac{-48+25\sqrt{3}}{11}$

Q23: Question should be to prove that  $\sin y = \pm \frac{1}{3}$ , not just  $\frac{1}{3}$

Q26 (b) (i): The RHS should be  $\frac{1}{\tan A + \cot B} + \frac{1}{\cot A + \tan B}$

P7: Add to the question description to also let  $\angle ABD = \theta$

### Exercise 3C

F2: Answers  $\frac{2t}{1+t^2}, 2A$

Q3 (c): Answer  $\frac{1}{4}$

P3: Answer  $\frac{1+t}{1-t}$

### Exercise 3D

Q4 (a): Answer  $\frac{1}{9}$

Q9 (b) (ii): Answer  $2 - \sqrt{3}$

### Exercise 3 Review

R7: Answer is  $2 - \sqrt{3}$

Q19: The LHS should be  $-p \cos x + q \sin x$  instead of  $p \cos x + q \sin x$

### Exercise 4A

Q6 (g): Answer is  $\frac{1}{\sqrt{3}}$

### Exercise 4C

Q5 (a): Question should be to prove  $\tan^{-1} 4 - \tan^{-1} \frac{3}{5} = \frac{\pi}{4}$

### Exercise 4 Review

Q11: Question should have  $f(x) = 1 + 2 \sin(3x)$

Q11 (b): Answer should have  $\sin^{-1} \dots$  instead of  $\sin \dots$

### Exercise 5A

Q12: The answers to (i), (ii) and (iii) should be for part (c) instead of (b).

### Exercise 5B

Q12 (c): Answer should be  $t = 1$  instead of  $t = 0.9$

Q16 (f): Answer is 46 cm

### Exercise 5D

Q4 (b): Inside of the bracket should be  $P - 100$

Q4 (d): Inside of the bracket should be  $P - 100$

Q5 (b): Answer is  $\frac{1}{10}$

Q6 (a): Answer is positive

P1 (e): Answer is 13.4

### Exercise 5E

Q8: Answer should have units  $\text{cm}^3/\text{min}$

Q17 (a) (ii): Answer is  $V = \frac{1}{9}\pi h^3$

### Exercise 5 Review

Q11 (b): Answer is  $N_0 = 9.88 \times 10^8$  and the rate should be  $1.5 \times 10^8$  algae per day

Q13 (e): Answer is 3.81 litres

## Year 12 Advanced Errata

### Exercise 1A

P1 (a): Answer is  $f(x - 6) = (2(x - 6) + 1)^2 = (2x - 11)^2$

### Exercise 1B

Q5: All instances of 'stretch', change them to 'squash'.

Q5 (a): Answer is  $\sqrt{2x + 1}$

P4: Answers should be as follows.

Translate left by 1.5, stretch horizontally by a factor of 2, then reflect across  $y$ -axis

Translate left by 1.5, reflect across  $y$ -axis, then stretch horizontally by a factor of 2

Stretch horizontally by a factor of 2, reflect across  $y$ -axis, then translate right by 3

### Exercise 1C

Q6 (c): Answer is "As  $x \rightarrow \infty$ ,  $y \rightarrow 0^+$  and as  $x \rightarrow -\infty$ ,  $y \rightarrow 0^-$ "

### Exercise 1D

Q19 (d): Answer is  $-2 \leq x \leq 3$

### Exercise 4A

Q9 (d): Answer is  $\frac{e^{x(x-n)}}{x^{n+1}}$

### Exercise 4C

Q4 (d): Answer is  $-\frac{1}{x^2} \cos\left(\frac{1}{x}\right)$

### Exercise 4D

Q3 (k): Answer is  $-\frac{4 \sin x \cos x}{\cos^2 x - \sin^2 x}$

### Exercise 4 Review

Q1 (e): Answer is  $\frac{e^x(3x-1)}{x^2}$

Q4 (d): Answer is  $-\frac{\ln 2}{x(\ln x)^2}$

### Exercise 5D

Q7 (b): Stationary point at (2,3).

### Exercise 5E

Q1 (b): Answer should include that it is a maximum stationary point.

Q4 (b): Answer should include the minimum stationary point (0,0).

Q8 (c): Answer should include that it is a minimum stationary point.

Q14 (a): The maximum stationary points should be  $\left(\pm\frac{\pi}{2}, 1\right)$ .

### Exercise 5F

Q13: Correct the question to "... and sells them for  $\$x$  per unit".

Q18 (a): The route is from  $A$  to  $P$ , then from  $P$  to  $C$ .

### Exercise 5 Review

Q13 (b): Answer should be  $\frac{1}{2}\left(e + \frac{1}{e}\right)$

Q15 (e): Answer should be  $-\frac{2}{\sqrt{3}} < x < \frac{2}{\sqrt{3}}$

Q16 (b): Answer should be "No stationary points"

Q20 (e): Answer should be "Global max  $18 - 5 \ln 18$ , global min  $5 - 5 \ln 5$ "

### Exercise 6A

Q5 (c): Inside of the bracket should be  $3x - 2$ .

### Exercise 6D

Q9 (c): Answer should be  $\frac{180}{\pi} \ln|\sec x^\circ| + C$

### Exercise 7A

Q8 (d): Answer is 20

Q8 (e): Answer is 36

Q8 (h): Answer is 58

### Exercise 7E

Q5 : Answer is  $t = 1$

### Exercise 7 Review

Q13 (b) : In the diagram,  $A$  should be at the  $x$ -intercept immediately the left to  $B$ .

### Exercise 8A

Q5 (b) : Answer is  $\frac{2}{15}$

Q5 (d): Answer is  $\frac{3}{4}$

Q8: The function should be  $\sin(x)$  instead of  $\cos(2x)$

Q10 (c): Diagram should include the shaded region under the curve for  $0 \leq x \leq \frac{1}{2}$

Q12: Question should read  $P\left(X \leq \frac{3}{2}\right) = \frac{1}{32}$

Q15 (b): Answer is 43.65%

### Exercise 8B

Q7 (e): Answers are  $F(x) = 1 - e^{-\frac{x}{10}}$  and  $m = 10 \ln(2)$

Q10 (a): The question should be "The CDF must always be non-negative"

### Exercise 8C

Q5 (c): Expression should be  $f''(x) = (x^2 - 1)f(x)$

### Exercise 8D

P1 (a): Answer is 0.16

### Exercise 8 Review

Q13 (c): Answer is 47.5%



## Year 12 Extension 1 Errata

### Exercise 1A

Q5 (c): Question should be  $1 + 2 \times 2 + 3 \times 2^2 + 4 \times 2^3 + \dots + n \times 2^{n-1} = \dots$

Q5 (f): Question should be  $1 \times 5 + 2 \times 6 + 3 \times 7 + \dots + n(n+4) = \dots$

Q11 (d): Question should have  $n \geq 3$  instead of  $n \geq 2$

### Exercise 1B

Q7 (b): Question should be to prove  $4^n + 5^n$  is divisible by 9, not 19

### Exercise 1 Review

Q1 (d): Question should read  $1 \times 3 + 2 \times 4 + 3 \times 5 + \dots + n(n+2) = \dots$

Q1 (e): Question should read  $1 + 2 + 2^2 + 2^3 + \dots + 2^n = \dots$

Q4 (c): Question should read  $\frac{1^2}{1 \times 3} + \frac{2^2}{3 \times 5} + \frac{3^2}{5 \times 7} + \dots + \frac{n^2}{(2n-1)(2n+1)} = \dots$

### Exercise 2B

Q7 (b): Answer is  $\overrightarrow{CB} = \mathbf{u} - \mathbf{v}$

### Exercise 2C

Q4 (a): Answer is  $\overrightarrow{AB} = \begin{bmatrix} 1 \\ 5 \end{bmatrix} = \overrightarrow{DC}$

Q4 (b): Answer is  $\overrightarrow{BC} = \begin{bmatrix} -5 \\ -1 \end{bmatrix} = \overrightarrow{AD}$

### Exercise 2D

Q9 (b): The identity should be  $\mathbf{a} \cdot \mathbf{b} = |\mathbf{a}||\mathbf{b}|$

Q9 (c): The identity should be  $\mathbf{a} \cdot \mathbf{b} = -|\mathbf{a}||\mathbf{b}|$

### Exercise 2F

Q20 (b): The identity is  $|AC|^2 + |BD|^2 = 2|AB|^2 + 2|CD|^2$

### Exercise 2G

Q10 (a): The displacement vector is  $6 \cos 60^\circ \mathbf{i} + 6 \sin 60^\circ \mathbf{j}$

Q12 (c): Answer is 1.02 hours.

Q12 (d): Answer is 8.71 kilometres per hour.

### Exercise 2H

Q8 (a): The magnitude should be 25.12 N and the angle should be  $204^\circ 55'$

Q8 (b): The resultant vector is  $\Sigma F = (15 - 4\sqrt{3})\mathbf{i} + (15\sqrt{3} - 46)\mathbf{j}$  and  $|\Sigma F| = 21.59\text{N}$  and true bearing  $154^\circ 02' \text{ T}$

Q8 (c): The true bearing is  $108^\circ 43' \text{ T}$

Q8 (d): The true bearing is  $0^\circ \text{ T}$

### Exercise 2I

Q7 (a): The  $\mathbf{i}$  component should be  $15\sqrt{3}t$

Q13 (d): Answer should be  $53^\circ 44'$

Q14 (c): Answer should be  $V = 20$

Q25 (c): Answer should be 1.36 seconds.

### Exercise 3A

Q3 (d): Missing answers  $\frac{19\pi}{12}, \frac{23\pi}{12}$

Q3 (e): Missing answers  $\frac{13\pi}{12}, \frac{23\pi}{12}$

Q3 (f): Missing answers  $\frac{7\pi}{6}, \frac{5\pi}{3}$

Q6 (e): Answers should be  $0, 2\pi, \frac{2\pi}{3}, \frac{4\pi}{3}$

Q10 (c): Domain for the question is  $0 \leq x \leq 2\pi$

Q12 (a): Missing answer  $\frac{35\pi}{18}$

Q12 (c): Missing answer  $\frac{23\pi}{12}$

Q14 (d): Change question to  $\tan\left(2x + \frac{\pi}{4}\right) = 1$

### Exercise 3B

Q1 (e): Missing answer  $\pi$

Q1 (i): Change question to  $\tan 2x + 2 \tan x = 0$ .

New answers  $0, \pi, 2\pi, \pm \tan^{-1} \sqrt{2}, \pi \pm \tan^{-1} \sqrt{2}$

### Exercise 3C

P1 (f): Answer should be  $x = \frac{k\pi}{n}$ , where  $k = 0, 1, 2, 3, \dots, 2n$

### Exercise 3D

Q14: Change question to "Without using calculus, find the range of  $f(x)$ ".

Answer is now  $f(x) \geq -1 + \sqrt{2}$  or  $f(x) \leq -1 - \sqrt{2}$

P1: Change question to "Without using calculus, find the range of  $f(x)$ ".

Answer is now  $-\sqrt{3} \leq f(x) \leq \sqrt{3}$

P2: Change question to "Without using calculus, find the range of  $f(x)$ ".

Answer is now  $f(x) \geq 2(-1 + \sqrt{2})$  or  $f(x) \leq -2(1 + \sqrt{2})$

### Exercise 3E

Q1 (b): The domain should be  $0 \leq x \leq 360^\circ$

Q1 (c): Missing answer  $360^\circ$ , and the other answer should be  $126^\circ 52'$  not  $126^\circ 53'$

### Exercise 4B

Q9 (a): The question should read "Simplify  $\frac{(1+x^2)-1}{1+x^2}$  ..." instead of  $\frac{(1-x^2)-1}{1+x^2}$

### Exercise 5C

Q11 (b): Answer is  $\frac{\pi^2}{3}$

Q13 (b): Answer is  $2\pi$

Q13 (c): Answer is  $2\pi$

P3 (a): The volume of the cap should be  $V_{\text{cap}} = \frac{\pi}{3}(3rh^2 - h^3)$

### Exercise 5D

Q8 (d): The question should say “The region in (b) is rotated...”

Q8 (e): The question should say “The region in (c) is rotated...”

### Exercise 5 Review

Q10 (b): Answer is  $\frac{256\sqrt{2}\pi}{15}$

### Exercise 7A

Q15: The differential equation should be  $y'' + n^2y = 0$

### Exercise 7C

Q9: The solution is  $y = \pm\sqrt{x^2 + A}$

Q11: The solution is  $y = \sin(x^2 + C)$  for some constant  $C$ .

Q13: The solution should be  $y = Ae^{-2x} + B$

### Exercise 7D

Q9 (g): Answer is 13.4 litres per minute

Q13: The population grows proportionately to the current population, and has a constant emigration rate  $m$ .

### Exercise 7 Review

Q1 (b): Should be  $y = x^2e^x$  instead of  $y = \frac{\ln x}{x}$

Q1 (c): Should be  $y = -\frac{3}{x}$  instead of  $\frac{dy}{dx} = -\frac{3}{x}$

Q17 (c): Answer is 71.6%

Q21 (b): Answer is 250 years

Q22 (c): Answer is 29.57 minutes

## Year 12 Extension 2 Errata

### Exercise 1E

Q12 (c): The last sentence should be "Then  $r$  is also divisible by 4"

### Exercise 2B

Q5: The answer is  $k = 8 - i$

### Exercise 2G

Q3 (d): The RHS should be  $\frac{\cot^4 \theta - 6 \cot^2 \theta + 1}{4 \cot^3 \theta - 4 \cot \theta}$

### Exercise 2J

Q12 (b): The polynomial is  $P(x) = x^4 + x^3 + 6x^2 + 3x + 1$

### Exercise 2K

Q1 (c): The answer is  $2e^{-\frac{5\pi i}{6}}$

### Exercise 5D

Q2 (b): Show that  $x = \frac{1}{4} \ln(1 + 40t)$

Q2 (c): Answer is  $\ln 3$