01. 0607_s23_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
	$\frac{y-2}{7}$ or $\frac{y}{7}-\frac{2}{7}$ final answer	**2**	**M1** for $y-2=7x$ or $\frac{y}{7}=x+\frac{2}{7}$

02. 0607_s23_ms_21 Q: 12

Question	Answer	Marks	Partial Marks
	Amplitude = 3 Period = 90 oe	**2**	**B1** for each or **SC1** for answers reversed

03. 0607_s23_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	$\frac{6}{\sqrt{x}}$ oe	**2**	**M1** for $y=\frac{k}{\sqrt{x}}$ or $y\sqrt{x}=k$

04. 0607_s23_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
	x^7	**1**	

05. 0607_s23_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	5	**3**	**M1** for $y=\frac{k}{(x-3)^2}$ oe **A1** for $k=180$ OR **M2** for $20\div\frac{(9-3)^2}{(6-3)^2}$ oe or **M1** for $\frac{y}{20}=\frac{\frac{1}{(9-3)^2}}{\frac{1}{(6-3)^2}}$ oe

06. 0607_s23_ms_22 Q: 15

Question	Answer	Marks	Partial Marks
(a)	–2	**1**	
(b)	1	**3**	**B2** for log 10 OR **M1** for any correct use of $a\log b = \log b^a$ or $\log a + \log b = \log ab$ or $\log a - \log b = \log\left(\frac{a}{b}\right)$

07. 0607_s23_ms_23 Q: 15

Question	Answer	Marks	Partial Marks
	$[x =] \frac{A-4y}{3A}$ oe	**3**	**B1** for $2A - 3Ax$ **M1** for correctly isolating *their x* term **M1** for correct division to find *their x* in a 3-term equation Maximum of 2 if answer not fully correct

08. 0607_m22_ms_22 Q: 18

Question	Answer	Marks	Partial Marks
	1	**3**	**M1** for $2\log 2 = \log 4$ soi **M1** for correct use of $\log p + \log q = \log pq$ or $\log p - \log q = \log\frac{p}{q}$

09. 0607_s22_ms_21 Q: 16

Question	Answer	Marks	Partial Marks
	4.5 or $\frac{9}{2}$ oe	**2**	**M1** for correct use of one rule of logs E.g. $\log\frac{9}{2} = \log 4.5$, or $2\log 3 = \log 3^2$

10. 0607_s22_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$[x =] 6, \quad [x =] -9$	**2**	**B1** for each

11. 0607_s22_ms_22 Q: 16

Question	Answer	Marks	Partial Marks
	5	3	**B1** for $1 = \log 10$ **M1** for one correct use of log laws eg $\log a + \log b = \log ab$ $\log a^b = b \log a$

12. 0607_s22_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
(a)	$\frac{50}{(x+2)^2}$	2	**M1** for $y = \frac{k}{(x+2)^2}$
(b)	8	2	**M1** for $(x + 2)^2 =$ *their* $50 \div 0.5$

13. 0607_w22_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	50000 or 5×10^4	2	**B1** for $2x = 10^5$

14. 0607_w22_ms_22 Q: 9

Question	Answer	Marks	Partial Marks
	$\frac{1}{4}$ oe	3	**M1** for $y = \frac{k}{x^3}$ oe **A1** for $k = 250$ OR **M2** for $2 \div \left(\frac{10}{5}\right)^3$ oe or **M1** for $\frac{y}{2} = \frac{\frac{1}{10^3}}{\frac{1}{5^3}}$ oe

15. 0607_w22_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
(a)	$\frac{x-2}{11}$ oe final answer	2	**M1** for $y - 2 = 11x$ or $\frac{y}{11} = x + \frac{2}{11}$ or $x = 11y + 2$
(b)	1	2	**M1** for sin $(11x + 2)$ soi or **B1** for 90

16. 0607_w22_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$y = [\pm]\sqrt[4]{\frac{100}{x^3}}$	3	**M1** for one correct use of $n\log a = \log a^n$ or $\log(a \times b) = \log a + \log b$ or $\log\left(\frac{a}{b}\right) = \log a - \log b$ **B1** for 100

17. 0607_w22_ms_23 Q: 10

Question	Answer	Marks	Partial Marks
	$[\pm]\ \sqrt{y^2 - 2a^2}$ final answer	3	**M1** for correct squaring **M1** for correct rearranging for x term **M1** for correct square root Max 2 marks if answer incorrect

18. 0607_w22_ms_23 Q: 15

Question	Answer	Marks	Partial Marks
	$\frac{hp}{x}$ final answer	1	

19. 0607_w22_ms_23 Q: 16

Question	Answer	Marks	Partial Marks
	$\frac{4}{5}$ oe	2	**M1** for 16 or 2^4 or 2^{5x} seen

20. 0607_m21_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
	$[x =]\frac{a}{3y+1}$ final answer	3	**M1** for correct removal of fraction(s) **M1** for isolating terms in x **M1** for correct division by a linear expression **maximum 2 marks if final answer incorrect**

21. 0607_s21_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
(a)	2.25 oe final answer	2	**M1** for $2 - 20 + 8x[= 0]$ oe
(b)	7 –2	2	**B1** for each

22. 0607_s21_ms_21 Q: 9

Question	Answer	Marks	Partial Marks
	$[x =] \frac{-3b}{5a-2b}$ or $\frac{3b}{2b-5a}$ final answer	3	**M1** for correctly eliminating fractions **M1** for correctly expanding brackets and collecting x terms **M1** for correctly factorising and solving equation in form $kx = m$ to $x = \frac{m}{k}$ Max mark **M2** if final answer is incorrect

23. 0607_s21_ms_22 Q: 11

Question	Answer	Marks	Partial Marks
	$\frac{2-3y}{y}$ or $\frac{2}{y}-3$ oe final answer	3	**M1** for $y(x + 3) = 2$ oe **M1FT** for $xy = 2 – 3y$ oe OR **M2** for $\frac{2}{y} = x+3$

24. 0607_s21_ms_23 Q: 3

Question	Answer	Marks	Partial Marks
	12	1	

25. 0607_s21_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$\sqrt[3]{\frac{A}{P}}-1$ final answer	3	**M1** for correct division by P **M1** for correct cube root **M1** for correct subtraction of 1 Maximum mark of **M2** if answer incorrect

26. 0607_s21_ms_23 Q: 16

Question	Answer	Marks	Partial Marks
	9	3	**B2** for $p = \frac{36}{\sqrt{q}}$ oe or $\frac{12\times\sqrt{9}}{\sqrt{16}} = p$ or better or **M1** for $p = \frac{k}{\sqrt{q}}$ oe or $12\times\sqrt{9} = p\times\sqrt{16}$

27. 0607_s21_ms_23 Q: 18

Question	Answer	Marks	Partial Marks
	[a =] 2 [b =] –4	**2**	**B1** for each

28. 0607_s21_ms_23 Q: 20

Question	Answer	Marks	Partial Marks
	$\sqrt{\frac{x^3}{y}}$ oe final answer	**3**	**M1** for $\log p^2$ or $\log x^3$ **M1** for correct use of $\log u - \log v = \log \frac{u}{v}$

29. 0607_w21_ms_21 Q: 9

Question	Answer	Marks	Partial Marks
	$\frac{18}{(x+2)^2}$	**2**	**M1** for $\frac{k}{(x+2)^2}$ oe

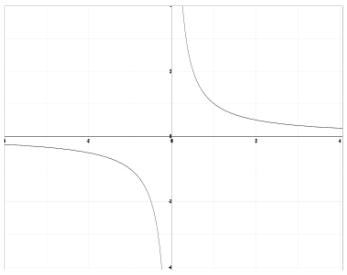
30. 0607_w21_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	$a = 2$ $b = -2$ [$c = -12$]	**3**	**B1** for one correct. **M1** for $(x + 2)(x – 3)$ OR **M1** for correct substitution of 3 points into $y = ax^2 + bx + c$

31. 0607_w21_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
(a)	81	**1**	
(b)	20	**3**	**M1** for one correct use of $a\log x = \log x^a$ **M1** for one correct use of $\log a + \log b = \log ab$ or $\log a - \log b = \log \frac{a}{b}$

32. 0607_w21_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	Correct sketch 	2	**B1** for each branch

33. 0607_w21_ms_22 Q: 11

Question	Answer	Marks	Partial Marks
	$\sqrt{2y}$ final answer	1	

34. 0607_w21_ms_22 Q: 19

Question	Answer	Marks	Partial Marks
	1.5 or $1\frac{1}{2}$ or $\frac{3}{2}$	3	**M1** for correct use of $\log p \pm \log q$ **M1** for correct use of $n \log p$

35. 0607_w21_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
(a)	-1	1	
(b)	$\frac{13}{5}$ oe	2	**M1** for $2x-5=\frac{1}{5}$ or $5(2x-5)=1$ or better

36. 0607_s20_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
	$\frac{A-3\pi r^2}{2\pi r}$ oe final answer	2	**M1** for correct rearrangement for term in h **M1** for correct division by $2\pi r$

37. 0607_s20_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$\frac{6}{\sqrt{x}}$	2	**M1** for $2=\frac{k}{\sqrt{9}}$

38. 0607_s20_ms_21 Q: 12

Question	Answer	Marks	Partial Marks
	$\sqrt[3]{\frac{x^2}{w}}$	3	**M1** for $2\log x = \log x^2$ or $3\log y = \log y^3$ (implied by cube root in answer). **M1** for correct use of $\log p - \log q = \log\left(\frac{p}{q}\right)$

39. 0607_s20_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
	$y = \frac{8}{x}$ oe	2	**M1** for $y = \frac{k}{x}$ oe

40. 0607_s20_ms_22 Q: 10

Question	Answer	Marks	Partial Marks
	$x = \frac{2-4y}{y}$ oe or $x = \frac{2}{y} - 4$ oe	2	**B1** for $yx + 4y = 2$ or $x + 4 = \frac{2}{y}$

41. 0607_s20_ms_23 Q: 13

Question	Answer	Marks	Partial Marks
(a)	3	1	
(b)	6	2	**M1** for any correct use of $\log a - \log b = \log\left(\frac{a}{b}\right)$ or $\log a + \log b = \log(a \times b)$ or $n\log a = \log a^n$

42. 0607_s20_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$y = \frac{30}{\sqrt{x}}$	2	**M1** for $y = \frac{k}{\sqrt{x}}$ oe

43. 0607_w20_ms_21 Q: 7

Question	Answer	Marks	Partial Marks
	8	**3**	**M2** for $6 = \frac{48}{x}$ or $x = \frac{16 \times 3}{6}$ or **M1** for $y = \frac{k}{x}$ or $16 \times 3 = 6 \times x$

44. 0607_w20_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	–7	**2**	**M1** for substitution of $u = 5$, $a = -3$ and $t = 4$ into $v = u + at$

45. 0607_w20_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
(a)	–2	**1**	
(b)	$\frac{15}{25}$ or $\frac{3}{5}$ or 0.6	**2**	**M1** for one correct use of $a\log b = \log b^a$ or $\log a - \log b = \log \frac{b}{a}$ or $\log a + \log b = \log(ab)$

46. 0607_w20_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$a = b\sqrt{2}$ or $a = \sqrt{2b^2}$ or $a = \frac{2}{\sqrt{2}}b$ final answer	**3**	**B2** for $a^2 = 2b^2$ or $a = \sqrt{\frac{b \times b}{\frac{1}{2}}}$ oe or **M1** for $\frac{a}{b} = \frac{b}{\frac{1}{2}a}$ oe e.g. $a : b = b : 0.5a$

47. 0607_w20_ms_23 Q: 8

Question	Answer	Marks	Partial Marks
(a)	8 cao	**1**	
(b)	3 cao	**1**	

48. 0607_w20_ms_23 Q: 10

Question	Answer	Marks	Partial Marks
	$[\pm]\sqrt{\frac{J-mk^2}{m}}$ or $[\pm]\sqrt{\frac{J}{m}-k^2}$ final answer	3	**M1** for correct division by m **M1** for correct rearrangement for h or h^2 term **M1** for correct square root

49. 0607_w20_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$y=\frac{16}{(x-3)^2}$	2	**M1** for $y=\frac{k}{(x-3)^2}$ oe

50. 0607_w20_ms_23 Q: 15

Question	Answer	Marks	Partial Marks
	$\frac{9}{32}$	2	**M1** for correct use of $n\log x = \log x^n$ or correct use of $\log p - \log q = \log\frac{p}{q}$

51. 0607_s19_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	$[b=]\frac{2A}{h}-a$ or $[b=]\ \frac{2A-ah}{h}$ oe Final answer	3	**M2** for $2A - ah = bh$ or $\frac{2A}{h} = a + b$ or **M1** for $2A = (a + b)h$ or $\frac{A}{h}=\frac{a+b}{2}$

52. 0607_s19_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
(a)	$\frac{1}{2}$ or 0.5	1	
(b)	log 7	2	**M1** for correct use of $\log a^n = n\log a$ or $\log(a \div b) = \log a - \log b$

53. 0607_s19_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
(a)	48	1	
(b)	$\sqrt{\frac{t}{3}}$	2	**M1** for correct division **M1** for correct square root, involving t

54. 0607_s19_ms_22 Q: 17

Question	Answer	Marks	Partial Marks
	$\frac{36}{\sqrt{x+4}}$	2	**M1** for $12 = \frac{k}{\sqrt{5+4}}$

55. 0607_s19_ms_22 Q: 19

Question	Answer	Marks	Partial Marks
(a)	8	2	**B1** for answer 2^3 or **M1** for $\log(x^2)$ or for $\log(4^3)$ seen
(b)	$\frac{xu}{v}$	1	

56. 0607_s19_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
	4	1	

57. 0607_s19_ms_23 Q: 13

Question	Answer	Marks	Partial Marks
	$[a =]\frac{2s-2ut}{t^2}$ oe	3	**M1** for correctly multiplying by 2 **M1** for correctly collecting terms **M1** for correctly dividing by t^2

58. 0607_w19_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$y = \frac{36}{\sqrt{x}}$	2	**M1** for $y = \frac{k}{\sqrt{x}}$

59. 0607_w19_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
	$g\left(\frac{T}{2\pi}\right)^2$ or $\frac{gT^2}{4\pi^2}$ final answer	3	**M1** for correct division by 2π or $4\pi^2$ **M1** for correct multiplication by g or g^2 **M1** for correct squaring

60. 0607_w19_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	4	3	**M2** for $\log x^3 = \log(2^4 \times 4)$ or **M1** for one correct use of rules of logs

61. 0607_w19_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$x=\frac{5y-5}{3y-2}$ or $x=\frac{5-5y}{2-3y}$	4	**M1** for correctly eliminating fractions **M1** for correctly collecting *their* x terms **M1** for correct final division of *their* terms

62. 0607_w19_ms_23 Q: 10

Question	Answer	Marks	Partial Marks
	$\frac{y-2}{y-3}$ oe	3	**M1** for $y(a-1)=3a-2$ oe **M1 FT** for $ay-3a=y-2$ **M1 FT** for completion

63. 0607_w19_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$[b=]-4$, $[c=]1$	3	**B2** for either value or **M1** for $(x-2)^2+p$ or $(x+q)^2-3$

64. 0607_s18_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
	$\frac{36}{x^2}$	2	**M1** for $y=\frac{k}{x^2}$ oe or $yx^2=k$

65. 0607_s18_ms_21 Q: 10

Question	Answer	Marks	Partial Marks
	$\frac{u^2-v^2}{2a}$ oe	2	**M1** for correct rearrangement to isolate the s term or **M1** for correct division by $2a$ or $-2a$

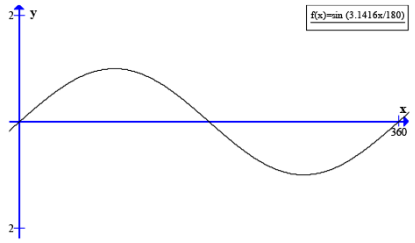
66. 0607_s18_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
(a)	$\frac{1}{2}$ or 0.5	1	
(b)	44	2	**M1** for correct use of $2\log 2=\log 2^2$ oe or for correct use of $\log p+\log q=\log pq$

67. 0607_s18_ms_23 Q: 5

Question	Answer	Marks	Partial Marks
	15	2	**B1** for numerator 300 or denominator 20

68. 0607_s18_ms_23 Q: 12

Question	Answer	Marks	Partial Marks
(a)	Correct Sketch 	2	**B1** for zeros at approx 0, 180, 360 **B1** for max at approx (90, 1) and min at approx (270, –1)

Question	Answer	Marks	Partial Marks
(b)	30, 150	2	**B1** for each

69. 0607_s18_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$x = \frac{cy}{a - by}$ oe final answer	3	**M1** for $bxy + cy = ax$ oe **M1FT** for $cy = ax - bxy$ oe **M1FT** for completion from *their* isolated x terms

70. 0607_s18_ms_23 Q: 15

Question	Answer	Marks	Partial Marks
(a)	$\frac{8}{25}$ or 0.32	3	**M1** for correct use of $n\log a = \log a^n$ **M1** for correct use of $\log a - \log b = \log(a \div b)$
(b)	64	1	

71. 0607_w18_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
(a)	3	1	
(b)	$f(x) \geqslant 0$	1	

72. 0607_w18_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	$x = -3$ ruled $y = -1$ ruled Correct region clearly shown	3	**B1** for each

73. 0607_w18_ms_22 Q: 11

Question	Answer	Marks	Partial Marks
	H, B, C, G	**4**	**B1** for each

74. 0607_w18_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
(a)	7.5	**1**	
(b)	1.4	**1**	

75. 0607_w18_ms_22 Q: 15

Question	Answer	Marks	Partial Marks
(a)	3	**1**	
(b)	195 or 255 or 375 or 435 etc.	**1**	

76. 0607_w18_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
(a)	3	**2**	**M1** for $\frac{1}{2}\times(-2)+4$
(b)	$\frac{y-c}{x}$ oe final answer	**2**	**M1** for correct rearrangement to isolate the m term **M1** for correct division by x

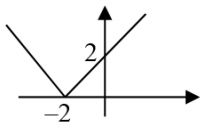
77. 0607_s17_ms_21 Q: 7

Question	Answer	Marks	Part Marks
	3	**2**	**M1** for $x^3 = 27$

78. 0607_s17_ms_21 Q: 16

Question	Answer	Marks	Part Marks
	$\log\frac{1}{2}$ or $-\log 2$ final answer	**3**	**M2** for $\log\left(\frac{3^2}{2^3}\times\left(\frac{2}{3}\right)^2\right)$ or better or **M1** for one correct use of log rules.

79. 0607_s17_ms_22 Q: 11

Question	Answer	Marks	Partial Marks
		3	**B2** for basic shape with cusp on –ve x-axis or **B1** for a basic 'v' shape modulus graph

80. 0607_s17_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	$40\sqrt{3}$	3	**M1** for $(p + q)(p – q)$ soi **A1** for $p + q = 10$ or $p – q = 4\sqrt{3}$ OR **B1** for $37 + 20\sqrt{3}$ oe **B1** for $37 – 20\sqrt{3}$ OR **B2** for $10\sqrt{3} + 10\sqrt{3} + 10\sqrt{3} + 10\sqrt{3}$

81. 0607_s17_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	4	2	**M1** for $\log 2^5$ or $\log \frac{a}{8}$ or $3\log 2$ or $\log 2^3$

82. 0607_s17_ms_22 Q: 15

Question	Answer	Marks	Partial Marks
	$a = 2$ $b = –2$ $c = –12$	3	**B2** for 2 correct or **M2** for $k(x + 2)(x – 3)$ and substitution of (4, 12) or **M1** for $(x + 2)(x – 3)$ soi by $a = 1$, $b = –1$, $c = –6$ or three correct equations in a, b, c If 0 scored, **B1** for 1 correct.

83. 0607_s17_ms_23 Q: 7

Question	Answer	Marks	Part Marks
	$\frac{v-u}{a}$ oe final answer	2	**M1** for correct rearrangement for at or t **M1** for correct division by a

84. 0607_s17_ms_23 Q: 11

Question	Answer	Marks	Part Marks
	Correct sketches	2	**B1** for each

85. 0607_s17_ms_23 Q: 18

Question	Answer	Marks	Part Marks
	$\log x$	1	

86. 0607_w17_ms_21 Q: 10

Question	Answer	Marks	Partial Marks
	3.6	3	**M2** for $12 \times \frac{\sqrt{9}}{\sqrt{100}}$ oe or $y = \frac{36}{\sqrt{x}}$ or **M1** for $\frac{y}{\sqrt{9}} = \frac{12}{\sqrt{100}}$ or $y = \frac{k}{\sqrt{x}}$

87. 0607_w17_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	$-3, -1, 1$	1	

88. 0607_w17_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	$[\pm]\sqrt{\frac{y+1}{2}}$ oe	3	**M1** for correct rearrangement **M1** for correct division by 2 **M1** for correct square root

89. 0607_w17_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
	0.5 oe	3	**M1** for $y = \frac{k}{\sqrt{x}}$ oe **A1** for $k = 4$ OR **M2** for $\frac{y}{2} = \frac{\sqrt{4}}{\sqrt{64}}$ or better

90. 0607_w17_ms_22 Q: 15

Question	Answer	Marks	Partial Marks
(a)	$\frac{9}{32}$	**2**	**M1** for correct use of $a\log b = \log b^a$ or $\log p - \log q = \log \frac{p}{q}$
(b)	0.5 oe	**1**	

91. 0607_w17_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$x = \frac{5A}{2A-3}$ or $x = \frac{-5A}{3-2A}$ final answer	**3**	**M1** for correctly eliminating fractions **M1** for correctly collecting *their x* terms **M1** for correct final division of *their* terms