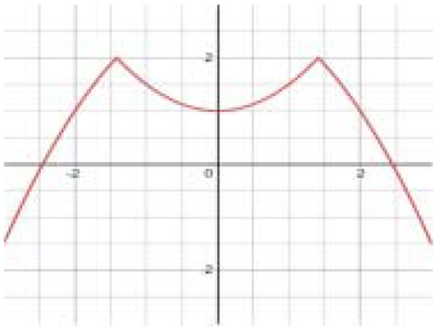
01. 0607_s24_ms_41 Q: 6

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | Correct sketch  | 3 | **B2** if peaks below $y = 1$ (by eye)<br>or rounded at peaks not cusps<br>or outside branches convex from below.<br><br>or **B1** for graph symmetrical about $y$-axis and in all 4 quadrants |
| (b) | 4.9[0] or 4.898 to 4.899 | 2 | **B1** for 2.45 or –2.45 or 2.449... or –2.449… seen |
| (c) | –2.24 or –2.236…<br>2.24 or 2.236… | 2 | **B1** for each or for both values seen |
| (d) | (0, 1) | 1 | |
| (e) | $k = 2$<br>$k < 1$ | 2 | **B1** for each |

02. 0607_s24_ms_43 Q: 4

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $-\frac{2}{3}$ oe<br>$\frac{8}{3}$ or $2\frac{2}{3}$ oe | 3 | **B2** for one correct<br>or **M1** for correctly isolating $y$ oe |
| (b) | gradient = $\frac{3}{2}$ | M1 | **FT** $1 \div$ *their* $-\frac{2}{3}$ |
| | substituting (2, 10) into $y =$ *their* $m + c$ | M1 | **FT** *their* $m \neq -\frac{2}{3}$ |
| | completing to $2y - 3x = 14$ with at least one line of working and no errors | A1 | |
| (c) | Correctly equating coefficients or sketch of one equation with positive slope and positive $y$-intercept | M1 | |
| | Correct method to eliminate one variable<br>or sketch of other equation with negative slope and positive $y$-intercept | M1 | |
| | $x = –2$ in correct answer space | A1 | |
| | $y = 4$ in correct answer space | A1 | If 0 scored, **SC1** for correct answer with no working |

03. 0607_m23_ms_42 Q: 3

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | Angle in semicircle | 1 | |
| (b)(i) | $x$ | 1 | |
| (b)(ii) | $2x$ oe | 1 | **FT** $2 \times$ *their* **(i)** |
| (b)(iii) | $180 - 2x$ oe | 1 | **FT** $180 -$ *their* **(ii)** |
| (b)(iv) | $90 - x$ oe | 1 | |
| (b)(v) | $90 + x$ oe | 1 | **FT** $180 -$ *their* **(iv)** |
| (c) | $[y =] 90 - 2x$ oe | 1 | **FT** $90 -$ *their* **(*b*)(ii)** |

04. 0607_s23_ms_41 Q: 5

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a)(i) | 4 | 1 | |
| (a)(ii) | (0, 7) | 1 | |
| (b)(i) | 8.94 or 8.944... | 3 | **M2** for $(5-1)^2 + (11-3)^2$ oe<br>soi by $4^2 + 8^2$<br>or **M1** for $(5-1)$ or $(11-3)$<br>or $(1-5)$ or $(3-11)$ soi by $\pm 4$ or $\pm 8$ |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (b)(ii) | $-2x + 17$ | 5 | **B1** for (7, 3)<br>**M1** for gradient $= \frac{5-1}{11-3}$ oe<br>**M1** for perp gradient $= -\frac{1}{their\ \frac{1}{2}} = m$<br>**M1** for *their* 3 = *their m* $\times$ *their* 7 + *c* oe |



05. 0607_w23_ms_43 Q: 12

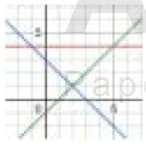
| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a)(i) | (0, 7) | 1 | |
| (a)(i) | $\left(\frac{-5}{3}, 2\right)$ | 2 | **M1** for $2 - 7 = 3x$<br>or<br>**B1** for $\frac{-5}{3}$ |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (b) | $y = \frac{3}{5}x + \frac{21}{5}$ oe | **5** | **B4** for $\frac{3}{5}x + \frac{21}{5}$ oe<br>OR<br>**B1** for midpoint = (–2, 3)<br>**M1** for $m_{AB} = \frac{8-(-2)}{-5-1}$ oe<br>**M1** for $m = \frac{-1}{their(m_{AB})}$<br>**M1** for substituting *their* (–2, 3) into $y = (their\ m)x + c$ oe |

06. 0607_m22_ms_42 Q: 1

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $-\frac{3}{4}$ oe | **2** | **M1** for isolating $y$ oe |
| | 6 | **1** | |
| (b)(i) | [grad = ] $\frac{5-3}{8-4}$ oe | **M1** | |
| | Substitution of (4, 3) or (8, 5) into $y = (their\ m)x + c$ or $y - y_1 = m(x - x_1)$ | **M1** | |
| | $y = \frac{1}{2}x + 1$ or $2y - 6 = x - 4$ or $2y - 10 = x - 8$ leading to $2y - x = 2$ without error or omission | **A1** | |
| (b)(ii) | $[y =]\frac{1}{2}x + 7$ | **2** | **B1** for $[y =]\frac{1}{2}x + k,\ k \neq 1$ or for $[y =]jx + 7,\ j \neq 0$ |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a)(i) | (0, 3) | **1** | |
| (a)(ii) | –2 | **1** | |
| (b) | 8 | **1** | |
| (c) | $y=\frac{2}{3}x-3$ oe final answer | **3** | **B2** for answer $\frac{2}{3}x-3$<br><br>OR<br><br>**M1** for $\frac{5-(-1)}{12-3}$ oe<br>**M1** for correct substitution of point into $y = (their\ m)x + c$ or e.g. $y - 5 = (their\ m)(x - 12)$ |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (d) | $y=-\frac{2}{5}x+\frac{26}{5}$ oe final answer | **4** | **B3** for answer $-\frac{2}{5}x+\frac{26}{5}$ oe<br><br>OR<br><br>**M1** for gradient $\frac{5}{2}$<br>**M1** for $m = \frac{-1}{their\left(\frac{5}{2}\right)}$ or better<br>**M1** for (3, 4) substituted into $y = (their\ m)x + c$ or e.g. $y - 4 = (their\ m)(x - 3)$ |
| (e)(i) | 3 correct ruled lines<br>  | **3** | **B1** for each line correct |
| (e)(ii) | Clear indication of correct region | **1** | **FT** if appropriate |

08. 0607_s21_ms_43 Q: 3

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $y = -7x + 35$ oe final answer | 4 | **B3** for $-7x + 35$ as final answer<br>OR<br>**M1** for gradient of $AB = \frac{0--1}{5--2}$ oe<br>**M1** for gradient of $BC = \frac{-1}{\textit{their}\text{ gradient of }AB}$ ($m$)<br>**M1** for substitution of (5, 0) in $y = (\textit{their}\ m)x + c$ oe |
| (b) | 3 | 2 | **M1** for use of $14 = 2 \times 7$ oe e.g. $\begin{pmatrix} x \\ 14 \end{pmatrix} = 2\begin{pmatrix} 1 \\ -7 \end{pmatrix}$<br>or $14 = \textit{their}\ (-7p + 35)$ |
| (c) | (–4, 13) | 2 | **FT** *their* $p - 7$ for $x$-coordinate<br>**B1** for each. |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (d) | 100 nfww | 4 | **M3** for $\sqrt{200} \times \sqrt{50}$ oe<br>or **M2** for $\sqrt{7^2 + 1^2}$ oe or $\sqrt{(-2)^2 + 14^2}$ oe<br>or **M1** for $(5--2)^2 + (0--1)^2$ oe<br>or $(-4--2)^2 + (14-0)^2$ oe<br>OR<br>**M3** for $9 \times 15 - 2 \times \frac{1}{2} \times 2 \times 14 - 2 \times \frac{1}{2} \times 7 \times 1$<br>or **M1** for $9 \times 15$<br>and **M1** for $\frac{1}{2} \times 2 \times 14$ or $\frac{1}{2} \times 7 \times 1$ |



09. 0607_w21_ms_41 Q: 13

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $\frac{b - fy}{ey - a}$ or $\frac{fy - b}{a - ey}$ final answer | 4 | **M1** for $y(ex + f) = ax + b$<br>**M1FT** for $eyx + fy = ax + b$<br>**M1FT** for $eyx - ax = b - fy$<br>**M1FT** for factorise and divide correctly<br>Max of 3 marks if answer incorrect |
| (b)(i) | [Amplitude] 3<br>[Period] 180 | 2 | **B1** for each |
| (b)(ii) | $9\sin(2x)$ | 1 | |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (b)(iii) | $-3\sin(2x)$ cao | 2 | **B1** for $3\sin(2(x \pm 90))$ oe |

10. 0607_w21_ms_43 Q: 4

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | –0.5 oe | 2 | **M1** for $\frac{1-5}{10-2}$ oe |
| (b) | $[y =] -0.5x + 6$ | 2 | **M1** for substituting (2, 5) or (10, 1) into $y = \textit{their}(-0.5)x + c$ |
| (c) | 13 | 3 | **M1** for grad perp $= \frac{-1}{\textit{their}(-0.5)}$<br>**M1** for $\frac{k-5}{6-2} = \textit{their}2$<br>OR<br>**M2** for $(k-5)^2 = 64$<br>or **M1** for $(10-2)^2 + (1-5)^2$<br>$[= (6-2)^2 + (k-5)^2]$ |
| (d) | (14, 9) | 2 | **B1** for each |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (e) | 40 | 3 | **M2** for $0.5\times[(10-2)^2 + (1-5)^2]$ oe<br>or **M1** for $(10-2)^2 + (1-5)^2$ oe |



11. 0607_s20_ms_41 Q: 3

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | (9, 4) | 2 | **B1** for each |
| (b) | $5\sqrt{2}$ cao | 3 | **M1** for $(10-3)^2 + (2-1)^2$ or better<br>**A1** for 50<br>If 0 scored, **SC1** for simplification of a surd if seen and if possible. |
| (c) | (6, 2.5) | 2 | **B1** for each |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (d) | $\left(0, \frac{4}{7}\right)$ oe<br>(–4, 0) | 5 | **M1** for gradient = $\frac{1}{7}$<br>**M1** for subst (3, 1) or (10, 2) into $y = (\textit{their } m)\,x + c$<br>**A1** for $y = \frac{1}{7}x + \frac{4}{7}$<br>**B1 FT** for $\left(0, \frac{4}{7}\right)$<br>**B1 FT** for (–4, 0) |

12. 0607_w20_ms_42 Q: 2

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | Translation<br>$\begin{pmatrix}4\\0\end{pmatrix}$ | 2 | **B1** for each |
| (b) | Triangle at (–1, –1), (–2, –1), (–1, –3) | 2 | **B1** for reflection in $y = x$ |
| (c) | Triangle at (3, –1), (4, –1), (3, –3) | 2 | **B1** for rotation 90° clockwise, wrong centre<br>or rotation 90° anti-clockwise about (1, –1) |
| (d) | Reflection<br>$x = 1$ | 2 | **B1** for each |
| (e) | Stretch<br>$x$-axis invariant oe<br>[factor] 2 | 3 | **B1** for each |



13. 0607_s19_ms_43 Q: 10

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $\begin{pmatrix}6\\3\end{pmatrix}$ | 1 | |
| (b) | 6.71 or 6.708… or $\sqrt{45}$ oe | 2 | **M1** for $(7-1)^2 + (5-2)^2$ oe |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (c) | $k-5=\sqrt{(their\mathbf{(b)})^2-3^2}$ | **M2** | **M1** for $(k-5)^2+(10-7)^2=(their\mathbf{(b)})^2$ oe<br>Reverse process scores 0. |
| | $k-5=6$ | **A1** | |
| (d) | $[y=]-x+12$ oe | **4** | **M1** for grad $AC=\frac{11-2}{10-1}$ oe<br>**M1** for grad perp $=-\frac{1}{their\ \text{grad}}$<br>**B1** for midpoint (5.5, 6.5) |
| (e) | (4, 8) | **3** | **M2** for $\begin{pmatrix}10\\11\end{pmatrix}-\begin{pmatrix}6\\3\end{pmatrix}$ or $\begin{pmatrix}7\\5\end{pmatrix}-\begin{pmatrix}-3\\3\end{pmatrix}$ oe<br>or **M1** for $CD=\begin{pmatrix}6\\3\end{pmatrix}$ or $BD=\begin{pmatrix}-3\\3\end{pmatrix}$ oe |

14. 0607_s18_ms_41 Q: 3

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $2\times3-7=-1$ oe | **1** | Correct substitution |
| (b)(i) | $\left(-\frac{1}{2},\ 0\right)$ oe | **1** | |
| (b)(ii) | (0, 4) | **1** | |
| (c) | $[y=]\ 3x-1$ | **3** | **M1** for gradient $=\frac{11-2}{4-1}$ oe or better<br>**M1** for substituting (1, 2) or (4, 11) into $y = (their\ m)x + c$ |

15. 0607_w18_ms_41 Q: 4

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a)(i) | (0, 8) | **1** | |
| (a)(ii) | (6, 0) | **1** | |
| (a)(iii) | (3, 4) | **2** | **FT** *their* **(i)** and **(ii)**<br>**B1FT** for each co-ordinate |
| (b) | $[y =] -\frac{4}{3}x + 8$ oe | **2** | **M1** for correct isolating $y$ term or for correct division |
| (c) | $y = \frac{3}{4}x - 4.5$ oe | **3** | **FT** *their* **(a)(ii)**<br>**B2** for $y = \frac{3}{4}x + k, \quad k \neq 0$<br>or **M1** for gradient = 0.75 oe<br>and **M1** for correct subst of *their* **(a)(ii)** into $y = mx + c$ |
| (d)(i) | (0, –4.5) | **1** | **Strict FT** *their* **(c)** and only if in form $y = mx + c$ |
| (d)(ii) | (–6, 3.5) | **3** | **FT** *their* **(a)**, **(d)(i)**<br>**B2** for one correct co-ordinate<br>or **M1** for $\begin{pmatrix} -6 \\ -4.5 \end{pmatrix}$ or $\begin{pmatrix} 6 \\ 4.5 \end{pmatrix}$ soi |

16. 0607_w17_ms_42 Q: 9

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a)(i) | $[y =]\ 5x - 3$ | 3 | **M1** for gradient = $\frac{12-2}{3-1}$ oe<br>**M1** for substituting (1, 2) or (3, 12) into $y = mx + c$<br><br>OR<br>**M2** for $\frac{y-2}{x-1} = \frac{12-2}{3-1}$ oe |
| (a)(ii) | $y = -\frac{1}{5}x + 2$ oe | 2 | **FT** *their* gradient in (i)<br>**M1** for answer in form $y = mx + 2$ oe or for $y = \frac{-1}{their\ 5}x + c$ oe |
| (b)(i) | $-2,\ \frac{2}{3}$ oe with correct working | 3 | **B2** for sketch with one –ve and one +ve zero<br>or **B1** for sketch of parabola vertex downwards<br><br>OR<br>**B2** for $(3x - 2)(x + 2)$<br>or **B1** for $3x(x + 2) - 2(x + 2)$<br>or $x(3x - 2) + 2(3x - 2)$<br>or for $(3x + a)(x + b)$ where $ab = -4$<br>or $a + 3b = 4$<br><br>OR<br>**B2** for $\frac{-4 \pm \sqrt{4^2 - 4(3)(-4)}}{2(3)}$ oe<br>or **B1** for $\sqrt{4^2 - 4(3)(-4)}$ or $\frac{-4 \pm \sqrt{.....}}{2(3)}$<br>If 0 or B1 scored, then + **B1** for $-2,\ \frac{2}{3}$ |
| (b)(ii) | $-2 < x < \frac{2}{3}$ | 2 | **FT** *their* (b)(i)<br>**B1** for $-2 < x$ or for $x < \frac{2}{3}$ seen<br>If 0 scored **SC1 FT** for $-2 \leqslant x \leqslant \frac{2}{3}$ |
| (c) | $[a =] -4,\ [b =] 8,\ [c =] 1$ | 3 | **M2** for $y = a(x-1)^2 + 5$<br>or **M1** for use of $y = a(x-h)^2 + k$ or for $c = 1$ or $-\frac{b}{2a} = 1$ |

17. 0607_s16_ms_41 Q: 10

| Question | Answer | Mark | Part Marks |
|---|---|---|---|
| (a) | 8.94 or 8.944... or $4\sqrt{5}$ | 3 | **M2** for $8^2 + 4^2$<br>**M1** for 8 and 4 seen |
| (b) | Gradient of $AB = \frac{1}{2}$ oe | 1 | |
| | Gradient of perpendicular = –2 oe | 1FT | |
| | $y = (their\text{–}2)x + c$ | M1 | |
| | midpoint (2, 1) | B1 | May be on diagram |
| | Substitute (2, 1) to reach $c = 5$ | A1 | |
| | OR | | |
| | $(x + 2)^2 + (y + 1)^2$ oe | B1 | |
| | $(x – 6)^2 + (y – 3)^2$ oe | B1 | |
| | equating above two expressions | M1 | |
| | 3 correct expansions | B1 | |
| | correct completion with no errors or omissions | A1 | |
| (c) | $\left(\frac{5}{3}, \frac{5}{3}\right)$ oe | 2 | **M1** for $x + 2x = 5$ oe |

18. 0607_w16_ms_41 Q: 6

| Qu. | Answer | Mark | Part Marks |
|---|---|---|---|
| (a) | $y = \frac{2}{3}x + \frac{5}{3}$ oe | 5 | **B1** for (2, 3) seen<br>**B1** for gradient of $AB = -\frac{3}{2}$<br>**B1FT** for gradient $= \frac{2}{3}$<br>**M1** for correct method in finding $c$. |
| (b) | $1\frac{1}{3}$ oe | 2 | **FT** $3 – their \frac{5}{3}$ in (a) (but not if 0)<br>**M1** for $3 – their \frac{5}{3}$ in (a) |

19. 0607_w16_ms_43 Q: 6

| Question | Answer | Mark | Part Marks |
|---|---|---|---|
| (a) | (4, –1), (–6, –1), (8, 7) | 3 | **B1** for each |
| (b) | (13, 7) | 2 | **B1** for each co-ordinate |
| (c) | $y = -\frac{7}{4}x - \frac{11}{4}$ oe | 4 | isw correct 3 term equation<br>**B1** for $\frac{4}{7}$<br>**B1FT** for $-\frac{7}{4}$<br>**M1** for correct method of finding '$c$'. |

20. 0607_s15_ms_43 Q: 4

| Qu. | Answer | Mark | Part Marks |
|---|---|---|---|
| (a) | (–4, 11) | 1, 1 | or **M1** for $\begin{pmatrix}2\\7\end{pmatrix}+\begin{pmatrix}-6\\4\end{pmatrix}$<br>or **SC1** for (8, 3) |
| (b) | 7.21 or 7.211... or $2\sqrt{13}$ | 2 | **M1** for $\sqrt{4^2+6^2}$ |
| (c) | $y=-\frac{2}{3}x+4$ oe | 2 | **B1** for gradient $=-\frac{2}{3}$<br>or **SC1** for $y=mx+4$ |
| (d) | (3, 2) | 1 | |
| (e) | $y=\frac{3}{2}x-\frac{5}{2}$ oe | 3 | **M1** for grad $=\frac{-1}{\textit{their}\text{ gradient}}$<br>**M1** for subs of *their* **(d)** into $y = mx + c$ oe |
| (f) | Kite | 1 | |

21. 0607_w15_ms_42 Q: 11

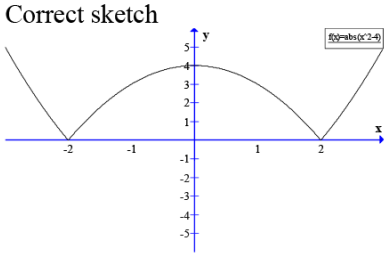
| Question | Answer | Mark | Part Marks |
|---|---|---|---|
| (a) | Correctly eliminate 1 variable<br>$x=3$<br>$y=2$ | M1<br>B1<br>B1 | or appropriate sketch<br><br>If **B0** scored, **M1** for correct substitution to find 2nd variable. |
| (b) | (3.5, 5) | 2 | **B1** for each |
| (c) | $y=6x-16$ oe | 3 | **M1** for gradient $=\frac{3}{0.5}$ oe soi<br>**M1** for substitution $B$ or $M$ into $y = mx + c$ oe |
| (d) | 5 | 2 | **M1** for $(k, k + 9)$ substituted into *their* **(c)** if linear |

22. 0607_s20_ms_43 Q: 9

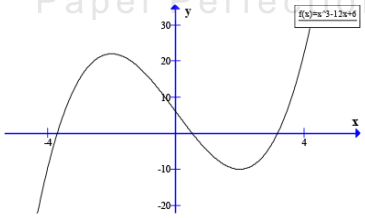
| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | $x=3$ oe | 1 | |
| (b) | $\left(\frac{1}{2}, 1\right)$ oe | 1 | |
| (c) | (–2, 0) | 2 | **B1** for each coordinate |

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (d) | $y = \frac{1}{2}x + \frac{3}{4}$ oe | **4** | 3 term equivalent<br>**M1** for gradient of $AC = \frac{-4-6}{3-(-2)}$<br>**M1** for $m = \frac{-1}{their\text{gradient}}$<br>**M1** for substituting *their* (b) into *their* $y = mx + c$ |

23. 0607_s19_ms_43 Q: 8

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | Correct sketch  | **3** | **B1** for no part of graph below $x$-axis<br>**B1** for symmetry about $y$-axis |
| (b) | $x = 0$ | **1** | |
| (c) | –2, 2 | **1** | Accept $x = -2$, $x = 2$ but not (–2, 0) or (2, 0) |
| (d)(i) | 4 | **1** | |
| (d)(ii) | $0 < k < 4$ **cao** | **2** | **B1** for 0 and 4 seen<br>or $k < 4$ or $k > 0$ |

24. 0607_w18_ms_42 Q: 5

| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| (a) | Correct sketch  | **2** | **B1** for any cubic with max on left of min |
| (b) | 0.511 or 0.5111...<br>3.18 or 3.180... | **2** | **B1** for each |
| (c)(i) | (–2, 22) | **1** | |
| (c)(ii) | (2, –10) | **1** | |
| (d) | Rotation[al]<br>[Order] 2<br>[About] (0, 6) | **3** | **B1** for each |