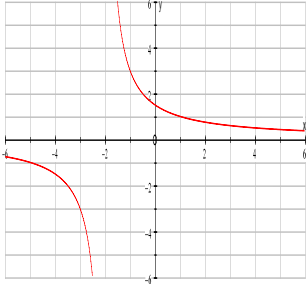
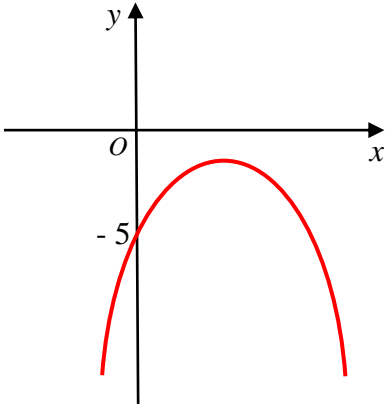


**Edexcel GCE  
Core Mathematics C1  
Gold Level G1  
(Mark Scheme)**

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Question Number	Scheme	Marks
1. (a)	$16^{\frac{1}{4}} = 2$ or $\frac{1}{16^{\frac{1}{4}}}$ or better $(16^{-\frac{1}{4}}) = \frac{1}{2}$ or 0.5	M1 A1 (2)
(b)	$(2x^{-\frac{1}{4}})^4 = 2^4 x^{-\frac{4}{4}}$ or $\frac{2^4}{x^4}$ or equivalent $x(2x^{-\frac{1}{4}})^4 = 2^4$ or 16	M1 A1 cao (2) [4]
2.	$32 = 2^5$ or $2048 = 2^{11}$ , $\sqrt{2} = 2^{\frac{1}{2}}$ or $\sqrt{2048} = (2048)^{\frac{1}{2}}$ $a = \frac{11}{2}$ (or $5\frac{1}{2}$ or 5.5)	B1, B1 B1 [3]
3.	$\left\{ \frac{2}{\sqrt{12} - \sqrt{8}} \right\} = \frac{2}{(\sqrt{12} - \sqrt{8})} \times \frac{(\sqrt{12} + \sqrt{8})}{(\sqrt{12} + \sqrt{8})}$ $= \frac{2(\sqrt{12} + \sqrt{8})}{12 - 8}$ $= \frac{2(2\sqrt{3} + 2\sqrt{2})}{12 - 8}$ $= \sqrt{3} + \sqrt{2}$	M1 A1 B1 B1 A1 cso [5]

Question Number	Scheme	Marks
4.	$x\sqrt{x} = x^{\frac{3}{2}}$ $x^{-\frac{1}{2}} \rightarrow kx^{\frac{1}{2}} \quad \text{or} \quad x^{\frac{3}{2}} \rightarrow kx^{\frac{5}{2}}$ $(y =) \frac{5x^{\frac{1}{2}}}{\frac{1}{2}} \dots + \frac{x^{\frac{5}{2}}}{\frac{5}{2}} (+C)$ $35 = \frac{5 \times 4^{\frac{1}{2}}}{\frac{1}{2}} + \frac{4^{\frac{5}{2}}}{\frac{5}{2}} + C$ $C = \frac{11}{5} \quad \text{or equivalent} \quad 2\frac{1}{5}, 2.2$ $y = 10x^{\frac{1}{2}} + \frac{2x^{\frac{5}{2}}}{5} + \frac{11}{5} \quad (\text{or equivalent simplified})$	B1 M1 A1 A1 M1 A1 A1ft <b>[7]</b>
5. (a)	 <p data-bbox="772 891 1214 1048">Translation parallel to <math>x</math>-axis            Top branch intersects +ve <math>y</math>-axis            Lower branch has no intersections            No obvious overlap</p> <p data-bbox="772 1070 1174 1151"><math>(0, \frac{3}{2})</math> or <math>\frac{3}{2}</math> marked on <math>y</math>-axis</p>	M1 A1 B1 (3) B1 B1 (2) <b>[5]</b>
(b)	$x = -2, \quad y = 0$	<b>[4]</b>
6.	$b^2 - 4ac$ attempted, in terms of $p$ . $(3p)^2 - 4p = 0$ or equivalent Attempt to solve for $p$ e.g. $p(9p - 4) = 0$ Must potentially lead to $p = k, k \neq 0$ $p = \frac{4}{9}$ (Ignore $p = 0$ , if seen)	M1 A1 M1 A1 cso <b>[4]</b>

Question Number	Scheme	Marks
<p>7. (a)</p> <p>(b)</p> <p>(c)</p>	<p>Discriminant: <math>b^2 - 4ac = (k + 3)^2 - 4k</math> or equivalent</p> <p><math>(k + 3)^2 - 4k = k^2 + 2k + 9 = (k + 1)^2 + 8</math></p> <p>For real roots, <math>b^2 - 4ac \geq 0</math> or <math>b^2 - 4ac &gt; 0</math> or <math>(k + 1)^2 + 8 &gt; 0</math>  <math>(k + 1)^2 \geq 0</math> for all <math>k</math>, so <math>b^2 - 4ac &gt; 0</math>, so roots are real for all <math>k</math> (oe)</p>	<p>M1 A1 (2)</p> <p>M1 A1 (2)</p> <p>M1 A1 cso (2) <b>[6]</b></p>
<p>8. (a)</p> <p>(b)</p> <p>(c)</p>	<p><math>4x - 5 - x^2 = q - (x - p)^2</math>, <math>p, q</math> are integers.  <math>\{4x - 5 - x^2 = \} - [x^2 - 4x + 5] = -[(x - 2)^2 - 4 + 5] = -[(x - 2)^2 + 1]</math>  <math>= -1 - (x - 2)^2</math></p> <p><math>\{ "b^2 - 4ac" = \} 4^2 - 4(-1)(-5) \quad \{ = 16 - 20 \}</math>  <math>= -4</math></p> <p>Correct <math>\cap</math> shape</p> <p>Maximum <b>within</b> the 4<sup>th</sup> quadrant</p> <p>Curve cuts through -5 or  <math>(0, -5)</math> marked on the y-axis</p> 	<p>M1 A1 A1 (3)</p> <p>M1 A1 (2)</p> <p>M1 A1 B1  (3) <b>[8]</b></p>

Question Number	Scheme	Marks
9. (a)	$a + 17d = 25$ o.e., $a + 20d = 32.5$ o.e.	B1 B1 (2)
(b)	$3d = 7.5$ so $d = \underline{2.5}$ $a = 32.5 - 20 \times 2.5$ so $a = \underline{-17.5}$ (*)	M1 A1 cso (2)
(c)	$2750 = \frac{n}{2} \left[ -35 + \frac{5}{2}(n-1) \right]$ { $4 \times 2750 = n(5n - 75)$ } $4 \times 550 = n(n - 15)$ <u><math>n^2 - 15n = 55 \times 40</math></u> (*)	M1 A1ft  M1 A1 cso (4)
(d)	$n^2 - 15n - 55 \times 40 = 0$ or $n^2 - 15n - 2200 = 0$ $(n - 55)(n + 40) = 0$ $n = \dots$ <u><math>n = 55</math></u> (ignore - 40)	M1 M1 A1 (3) [11]
10. (a)	$\left( \frac{1}{2}, 0 \right)$	B1 (1)
(b)	$\frac{dy}{dx} = x^{-2}$ At $x = \frac{1}{2}$ , $\frac{dy}{dx} = \left( \frac{1}{2} \right)^{-2} = 4$ (= m) Gradient of normal = $-\frac{1}{m}$ $\left( = -\frac{1}{4} \right)$ Equation of normal: $y - 0 = -\frac{1}{4} \left( x - \frac{1}{2} \right)$ $2x + 8y - 1 = 0$ (*)	M1 A1 A1 M1 M1 A1cso (6)
(c)	$2 - \frac{1}{x} = -\frac{1}{4}x + \frac{1}{8}$ $= 2x^2 + 15x - 8 = 0$ or $[8y^2 - 17y = 0]$ $(2x - 1)(x + 8) = 0$ leading to $x = \dots$ $x = \left[ \frac{1}{2} \right]$ or $-8$ $y = \frac{17}{8}$ (or exact equivalent)	M1 M1 A1 A1ft (4) [11]

Question Number	Scheme	Marks
11. (a)	$x = 2: \quad y = 8 - 8 - 2 + 9 = 7 \quad (*)$	B1 (1)
(b)	$\frac{dy}{dx} = 3x^2 - 4x - 1$ $x = 2: \quad \frac{dy}{dx} = 12 - 8 - 1 (= 3)$ $y - 7 = 3(x - 2), \quad \underline{y = 3x + 1}$	M1 A1 A1ft M1, <u>A1</u> (5)
(c)	$m = -\frac{1}{3} \quad \left(\text{for } -\frac{1}{m} \text{ with their } m\right)$ $3x^2 - 4x - 1 = -\frac{1}{3}, \quad 9x^2 - 12x - 2 = 0 \quad \text{or} \quad x^2 - \frac{4}{3}x - \frac{2}{9} = 0 \quad (\text{o.e.})$ $\left(x = \frac{12 + \sqrt{144 + 72}}{18}\right) \left(\sqrt{216} = \sqrt{36} \cdot \sqrt{6} = 6\sqrt{6}\right) \text{ or}$ $(3x - 2)^2 = 6 \rightarrow 3x = 2 \pm \sqrt{6}$ $x = \frac{1}{3}(2 + \sqrt{6}) \quad (*)$	B1ft M1, A1 M1 A1cso (5) <b>[11]</b>

## Statistics for C1 Practice Paper Gold Level G4

Qu	Max score	Modal score	Mean %	Mean score for students achieving grade:							
				ALL	A*	A	B	C	D	E	U
1	4		57	2.29	3.76	3.36	2.81	2.42	2.26	1.86	1.51
2	3		42	1.26		2.27	1.47	1.09	0.82	0.60	0.33
3	5		67	3.37	4.83	4.47	3.90	3.48	3.12	2.75	1.91
4	7		57	4.01		6.60	5.45	4.75	3.45	2.96	1.48
5	5		49	2.44		4.16	3.07	2.39	1.84	1.39	0.76
6	4		58	2.33		3.63	3.05	2.58	1.97	1.33	0.55
7	6		45	2.70	5.28	4.49	3.33	2.78	2.22	1.71	0.68
8	8		52	4.19	7.58	6.54	5.19	4.38	3.65	2.98	1.66
9	11		54	5.94		10.09	8.28	6.79	5.24	4.23	2.48
10	11		47	5.12	10.95	10.36	8.63	6.58	4.23	3.19	1.09
11	11		50	5.47		9.61	7.24	5.54	4.03	2.69	1.15
	<b>75</b>		<b>52</b>	<b>39.12</b>		<b>65.58</b>	<b>52.42</b>	<b>42.78</b>	<b>32.83</b>	<b>25.69</b>	<b>13.60</b>