

Higher Maths Homework Pack

- Homework should be completed by the date shown in the homework jotter.
- All working should be shown for questions.
- Don't leave it until the last minute and then come in and say you didn't know how to do it!!

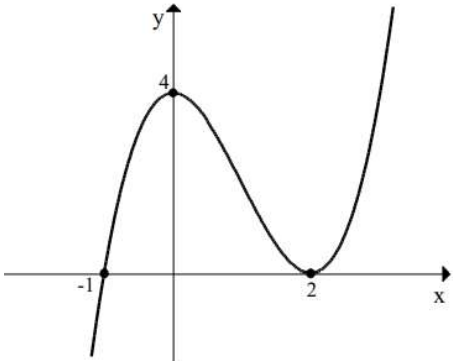
Week 1 – To be completed by Tuesday 13th June

Q		Marks
1	Factorise fully: 1. $h^2 + 7h - 30$ 2. $d^2 - 9c^2$ 3. $x^2 + 19x + 60$ 4. $9y^2 - 18y$ 5. $3y^2 - 12$ 6. $5p^2 - 2p - 16$ 7. $2x^2 + 32x$ 8. $2x^2 - 32$	8
2	Evaluate: (a) $25^{\frac{1}{2}}$ (b) $16^{\frac{1}{4}}$ (c) $125^{\frac{1}{3}}$ (d) $128^{\frac{1}{7}}$ (e) $8^{\frac{2}{3}}$	5
3	$f(x) = x^3 - 7x + 6$. (a) Show that $(x - 2)$ is a factor of $f(x)$. (b) Hence solve the equation $f(x) = 0$.	2 2
4	Show that 4 is a root of the equation $x^3 + 2x^2 - 15x - 36 = 0$ and find the other roots of this equation.	4
	Total	21

Week 2 - To be completed by Tuesday 20th June

Q		Marks
1	(1) $4t^{\frac{1}{2}} \times t^{\frac{3}{2}}$ (2) $6u^{\frac{3}{4}} \times 3u^{\frac{9}{4}}$ (3) $5w^{\frac{5}{2}} \times 2w^{-\frac{5}{2}}$ (4) $10x^{\frac{7}{2}} \div 2x^{-\frac{1}{2}}$	4
2	1. $x^2 - 9x = 0$ 2. $x^2 + 13x + 40 = 0$ 3. $a^2 - 81 = 0$ 4. $x^2 + 3x - 10 = 0$	4
3	(a) Show that $(x - 1)$ is a factor of $x^3 + 5x^2 + 4x - 10$. (b) Hence, or otherwise, show that $x = 1$ is the only real solution to the equation $x^3 + 5x^2 + 4x - 10 = 0$.	2 2
4	(a) $f(x) = 4x^3 + 13x^2 + cx + d$. Given $(x - 1)$ and $(x + 5)$ are both factors of $f(x)$, find c and d . (b) Hence solve $f(x) = 0$ when c and d take these values.	4 1
	Total	17

Week 3 - To be completed by Tuesday 27th June

Q		Marks
1	<p>Determine the equation of the function</p> 	2
2	<p>$f(x) = 2x - 5$ and $g(x) = x^2 + 1$. Find a formula for $f(g(x))$.</p>	2
3	<p>$f(x) = 2x^2$ and $g(x) = 5x - 4$.</p> <p>(a) Find $f(g(2))$.</p> <p>(b) Find a formula for $f(g(x))$.</p>	2 2
4	<p>A function $g(x)$ is defined on \mathbb{R}, the set of real numbers, by</p> $g(x) = \frac{1}{5}x - 4.$ <p>Find the inverse function, $g^{-1}(x)$.</p>	3
	Total	11