

## SURDS-SET-2

1	<p>(a) Simplify <math>\sqrt{18} + \sqrt{72}</math>.</p> <p style="text-align: right;">..... [2]</p> <p>(b) Rationalise the denominator.</p> $\frac{1}{\sqrt{5}+2}$ <p style="text-align: right;">..... [2]</p>								
MS-1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 10%; text-align: center;">(a)</td> <td style="width: 40%;"><math>9\sqrt{2}</math></td> <td style="width: 10%; text-align: center;">2</td> <td style="width: 40%;">B1 for <math>3\sqrt{2}</math> or <math>6\sqrt{2}</math></td> </tr> <tr> <td style="text-align: center;">(b)</td> <td><math>\sqrt{5}-2</math></td> <td style="text-align: center;">2</td> <td>M1 for <math>\times \frac{\sqrt{5}-2}{\sqrt{5}-2}</math></td> </tr> </tbody> </table>	(a)	$9\sqrt{2}$	2	B1 for $3\sqrt{2}$ or $6\sqrt{2}$	(b)	$\sqrt{5}-2$	2	M1 for $\times \frac{\sqrt{5}-2}{\sqrt{5}-2}$
(a)	$9\sqrt{2}$	2	B1 for $3\sqrt{2}$ or $6\sqrt{2}$						
(b)	$\sqrt{5}-2$	2	M1 for $\times \frac{\sqrt{5}-2}{\sqrt{5}-2}$						
2	<p>Rationalise the denominator and simplify your answer.</p> $\frac{32}{\sqrt{8}}$ <p style="text-align: right;">..... [2]</p>								
MS-2	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 10%; text-align: center;">(a)</td> <td style="width: 40%;"><math>3x^8</math></td> <td style="width: 10%; text-align: center;">2</td> <td style="width: 40%;">B1 for <math>3x^k</math> or <math>kx^8</math>, <math>k \neq 0</math></td> </tr> <tr> <td style="text-align: center;">(b)</td> <td><math>2x^4</math></td> <td style="text-align: center;">2</td> <td>B1 for <math>2x^k</math> or <math>kx^4</math>, <math>k \neq 0</math></td> </tr> </tbody> </table>	(a)	$3x^8$	2	B1 for $3x^k$ or $kx^8$ , $k \neq 0$	(b)	$2x^4$	2	B1 for $2x^k$ or $kx^4$ , $k \neq 0$
(a)	$3x^8$	2	B1 for $3x^k$ or $kx^8$ , $k \neq 0$						
(b)	$2x^4$	2	B1 for $2x^k$ or $kx^4$ , $k \neq 0$						
3	<p>Simplify.</p> $\sqrt{32} - \sqrt{72} + \sqrt{50}$ <p style="text-align: right;">..... [2]</p>								

MS-3	$3\sqrt{2}$	2	<b>M1</b> for $4\sqrt{2}$ or $6\sqrt{2}$ or $5\sqrt{2}$
4	<p>Rationalise the denominator, giving your answer in its simplest form.</p> $\frac{5 + \sqrt{3}}{5 - \sqrt{3}}$ <p style="text-align: right;">..... [3]</p>		
MS-4	$\frac{(5 + \sqrt{3})^2}{22} \text{ or } \frac{14 + 5\sqrt{3}}{11}$ <p>as final answer</p>	3	<b>M2</b> for $\frac{(5 + \sqrt{3}) \times (5 + \sqrt{3})}{25 + 5\sqrt{3} - 5\sqrt{3} - (\sqrt{3})^2}$ or <b>M1</b> for $\frac{5 + \sqrt{3}}{5 - \sqrt{3}} \times \frac{5 + \sqrt{3}}{5 + \sqrt{3}}$
5	<p>Simplify.</p> $(5 + 2\sqrt{3})^2$ <p style="text-align: right;">..... [3]</p>		

MS-5	$37 + 20\sqrt{3}$	3	<b>B2</b> for $37 + a\sqrt{3}$ or $b + 20\sqrt{3}$ , $a, b \neq 0$ or <b>M1</b> for $5^2 + 10\sqrt{3} + 10\sqrt{3} + 2\sqrt{3} \times 2\sqrt{3}$
6	<p>(a) Simplify <math>\sqrt{98}</math>.</p> <p style="text-align: right;">..... [1]</p> <p>(b) Rationalise the denominator.</p> $\frac{1}{3 - \sqrt{5}}$ <p style="text-align: right;">..... [2]</p>		
MS-6	(a)	$7\sqrt{2}$	1
	(b)	$\frac{3 + \sqrt{5}}{4}$	2 <b>M1</b> for $\times \frac{3 + \sqrt{5}}{3 + \sqrt{5}}$

7	<p>(a) Simplify <math>\sqrt{20} + \sqrt{125}</math>.</p> <p>..... [2]</p> <p>(b) Rationalise the denominator and simplify your answer.</p> $\frac{18}{\sqrt{7}-1}$ <p>..... [2]</p>		
MS-7	(a)	$7\sqrt{5}$	2 <b>B1</b> for $2\sqrt{5}$ or $5\sqrt{5}$
	(b)	$3(\sqrt{7}+1)$ or $3\sqrt{7}+3$	2 <b>M1</b> for $\times \frac{\sqrt{7}+1}{\sqrt{7}+1}$

8	<p>(a) Simplify.</p> $\sqrt{300} - \sqrt{27}$ <p>..... [2]</p> <p>(b) Rationalise the denominator and simplify your answer.</p> $\frac{14}{3 - \sqrt{2}}$ <p>..... [3]</p>		
MS-8	(a)	$7\sqrt{3}$	2 M1 for $10\sqrt{3}$ or $3\sqrt{3}$
	(b)	$2(3 + \sqrt{2})$ or $6 + 2\sqrt{2}$	3 M2 for $\frac{14(3 + \sqrt{2})}{(3 - \sqrt{2})(3 + \sqrt{2})}$ or M1 for $\times \frac{(3 + \sqrt{2})}{(3 + \sqrt{2})}$
9	<p>Expand and simplify.</p> $(3\sqrt{2} + 7)^2$ <p>..... [3]</p>		

MS-9	$\frac{2\sqrt{2}}{3} \text{ or } \frac{\sqrt{8}}{3}$	3	<b>B2</b> for $\sqrt{3^2 - 1^2}$ or better or <b>B1</b> for $k^2 + 1^2 = 3^2$ or better