

SURDS

KCSE 1989 – 2012 Form 3 Mathematics

1.	<p>1996 Q 16 P2</p> <p>Simplify $(1 + \sqrt{3})(1 - \sqrt{3})$ (1 mk)</p> <p>Hence evaluate $\frac{1}{1 + \sqrt{3}}$ to 3 s.f given that $\sqrt{3} = 1.7321$ (1 mk)</p>
2.	<p>1997 Q 12 P2</p> <p>If $\frac{\sqrt{14}}{\sqrt{7} - \sqrt{2}} - \frac{\sqrt{14}}{\sqrt{7} + \sqrt{2}} = a\sqrt{7} + b\sqrt{2}$,</p> <p>Find the values of a and b where a and b are rational numbers (4 mks)</p>
3.	<p>1998 Q 3 P2</p> <p>Simplify as far as possible, leaving your answer in the form of surd</p> $\frac{1}{\sqrt{14} - 2\sqrt{3}} - \frac{1}{\sqrt{14} + 2\sqrt{3}}$
4.	<p>2003 Q 10 P2</p> <p>Given that $a = \frac{1}{\sqrt{3}}$ and $b = \sqrt{13}$, express $2\sqrt{3} - 6\sqrt{39}$ in terms of a and b and Simplify the answer.</p>
5.	<p>2004 Q 16 P2</p> <p>Without using mathematical tables, simplify $\frac{2}{3 - \sqrt{7}} - \frac{2}{3 + \sqrt{7}}$ in the form $a\sqrt{b}$ (3 marks)</p>
6.	<p>2005 Q 2 P2</p> <p>Without using mathematical Tables, simplify $\frac{\sqrt{63} + \sqrt{72}}{\sqrt{32} + \sqrt{28}}$ (3 marks)</p>
7.	<p>2006 Q 6 P2</p> <p>Without using a calculator or mathematical tables, simplify $\frac{3\sqrt{2} - \sqrt{3}}{2\sqrt{3} - \sqrt{2}}$ (3 marks)</p>

8.	<p>2007 Q 15 P2</p> <p>Simplify $\frac{3}{\sqrt{5}-2} + \frac{1}{\sqrt{5}}$ leaving the answer in the form $a + b\sqrt{c}$, where a, b and c are rational numbers (3 marks)</p>
9.	<p>2008 Q 13 P2</p> <p>Without using a calculator or mathematical tables, express $\frac{\sqrt{3}}{1-\cos 30^\circ}$ in surd form and simplify (3mks)</p>
10	<p>2009 Q 10 P2</p> <p>Simplify $\frac{\sqrt{3}}{\sqrt{3}-\sqrt{2}}$ (2 mks)</p>
11	<p>2010 Q 2 P2</p> <p>Simplify $\frac{4}{\sqrt{5}+\sqrt{2}} - \frac{3}{\sqrt{5}-\sqrt{2}}$ (3 marks)</p>
12	<p>2011 Q 8 P2</p> <p>Write $\sin 45^\circ$ in the form $\frac{1}{\sqrt{a}}$ where a is a positive integer. Hence simplify $\frac{\sqrt{8}}{1+\sin 45^\circ}$ leaving the answer in surd form. (3mks)</p>
13	<p>2012 Q10 P2</p> <p>Simplify $\frac{\sqrt{5}}{\sqrt{5}-2}$, leaving the answer in the form $a + b\sqrt{c}$ where a, b and c are integers. (2 marks)</p>