



SURDS

RATIONALISING THE DENOMINATOR

NO CALCULATOR

Ref: G185. **2F1**

A1 Rationalise $\frac{1}{\sqrt{7}}$	A2 Rationalise $\frac{12}{\sqrt{3}}$	A3 Rationalise $\frac{5}{\sqrt{5}}$	A4 Rationalise $\frac{2}{\sqrt{6}}$
B1 Rationalise $\frac{4+5\sqrt{2}}{\sqrt{2}}$	B2 Rationalise $\frac{12-7\sqrt{3}}{\sqrt{3}}$	B3 Rationalise $\frac{7+4\sqrt{5}}{\sqrt{5}}$	B4 Rationalise $\frac{6+5\sqrt{7}}{\sqrt{7}}$
C1 Rationalise $\frac{5}{2+\sqrt{3}}$	C2 Rationalise $\frac{8}{3-\sqrt{5}}$	C3 Rationalise $\frac{4}{2-\sqrt{3}}$	C4 Rationalise $\frac{6}{3\sqrt{2}-4}$
D1 Rationalise $\frac{\sqrt{3}}{2-\sqrt{3}}$	D2 Rationalise $\frac{1+\sqrt{5}}{3-\sqrt{5}}$	D3 Rationalise $\frac{8+\sqrt{8}}{2-\sqrt{2}}$	D4 Rationalise $\frac{3+\sqrt{6}}{\sqrt{3}-\sqrt{2}}$



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<p>A1</p> $\frac{1}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{7}$	<p>A2</p> $\frac{12}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3}$ $= 4\sqrt{3}$	<p>A3</p> $\frac{5}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{5}$ $= \sqrt{5}$	<p>A4</p> $\frac{2}{\sqrt{6}} \times \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{6}$ $= \frac{\sqrt{6}}{3}$
<p>B1</p> $\frac{4+5\sqrt{2}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}+5 \times 2}{2}$ $= 2\sqrt{2}+5$ $(= 5+2\sqrt{2})$	<p>B2</p> $\frac{12-7\sqrt{3}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}-7 \times 3}{3}$ $= 4\sqrt{3}-7$ $(= -7+4\sqrt{3})$	<p>B3</p> $\frac{7+4\sqrt{5}}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{7\sqrt{5}+4 \times 5}{5}$ $= \frac{7\sqrt{5}+20}{5}$ $= 4 + \frac{7\sqrt{5}}{5}$	<p>B4</p> $\frac{6+5\sqrt{7}}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} = \frac{6\sqrt{7}+5 \times 7}{7}$ $= \frac{6\sqrt{7}+35}{7}$ $= 5 + \frac{6\sqrt{7}}{7}$
<p>C1</p> $\frac{5}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}} = \frac{10-5\sqrt{3}}{2^2-3}$ $= \frac{10-5\sqrt{3}}{1}$ $= 10-5\sqrt{3}$	<p>C2</p> $\frac{8}{3-\sqrt{5}} \times \frac{3+\sqrt{5}}{3+\sqrt{5}} = \frac{24+8\sqrt{5}}{3^2-5}$ $= \frac{24+8\sqrt{5}}{4}$ $= 6+2\sqrt{5}$	<p>C3</p> $\frac{4}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}} = \frac{8+4\sqrt{3}}{2^2-3}$ $= \frac{8+4\sqrt{3}}{1}$ $= 8+4\sqrt{3}$	<p>C4</p> $\frac{6}{3\sqrt{2}-4} \times \frac{3\sqrt{2}+4}{3\sqrt{2}+4} = \frac{18\sqrt{2}+24}{3^2 \times 2 - 4^2}$ $= \frac{18\sqrt{2}+24}{2}$ $= 12+9\sqrt{2}$
<p>D1</p> $\frac{\sqrt{3}}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}} = \frac{2\sqrt{3}+3}{2^2-3}$ $= 3+2\sqrt{3}$	<p>D2</p> $\frac{1+\sqrt{5}}{3-\sqrt{5}} \times \frac{3+\sqrt{5}}{3+\sqrt{5}} = \frac{3+\sqrt{5}+3\sqrt{5}+5}{3^2-5}$ $= \frac{8+4\sqrt{5}}{4}$ $= 2+\sqrt{5}$	<p>D3</p> $\frac{8+\sqrt{8}}{2-\sqrt{2}} \times \frac{2+\sqrt{2}}{2+\sqrt{2}} = \frac{16+8\sqrt{2}+2\sqrt{8}+\sqrt{16}}{2^2-2}$ $= \frac{16+8\sqrt{2}+4\sqrt{2}+4}{2}$ $= 10+6\sqrt{2}$	<p>D4</p> $\frac{3+\sqrt{6}}{\sqrt{3}-\sqrt{2}} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} = \frac{3\sqrt{3}+3\sqrt{2}+\sqrt{18}+\sqrt{12}}{3-2}$ $= 3\sqrt{3}+3\sqrt{2}+3\sqrt{2}+2\sqrt{3}$ $= 5\sqrt{3}+6\sqrt{2}$