Higher : Addition Formulae — Revision

2018 P1 Q13	$(a)\ (i)\ \frac{4\sqrt{7}}{11} \quad (ii)\ \frac{3}{11} \qquad (b)\ \frac{34}{11\sqrt{11}}$	
2017 P2 Q6	$x = 0.848, 2.29$	
2016 P1 Q13	$\cos p = \frac{4}{\sqrt{17}}$, $\cos q = \frac{4}{5}$ $\sin p = \frac{1}{\sqrt{17}}$, $\sin q = \frac{3}{5}$	
2015 P1 Q10	(a) $\frac{4}{5}$ (b) $\frac{3}{\sqrt{10}}$	
2014 P2Q6	$\sin x = \frac{3}{4}$ and $x = 0\cdot848,\ 2\cdot29$ $\sin x = -1$, and $x = \frac{3\pi}{2}$	
2013 P2 Q8	$x = \frac{\pi}{4}, \frac{\pi}{2}$ $\quad x = \frac{5\pi}{4}, \frac{3\pi}{2}$	
2011 P1 Q23	(a) x = 0, 60, 300 (b) x = 0, 30, 150, 180, 210, 330	
2010 P2 Q4	$\cos x = -\frac{3}{4}$ and $\cos x = 2$ $2\cdot419,\ 3\cdot864$ and no solution	

2010 P1 Q23	(a) (ii) $\sin a = \frac{3}{\sqrt{13}}$ (b) $\sin b = \frac{3}{5}$ $\cos b = \frac{4}{5}$ (c) $\sin(a-b) = \frac{6}{5\sqrt{13}}$ $\sin(b-a) = -\frac{6}{5\sqrt{13}}$	
2009 Q24	(a) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ *or equivalent* (b) Proof (c) $\frac{\sqrt{6}}{2}$ $\left(\text{accept } \sqrt{\frac{3}{2}} \text{ or } \frac{\sqrt{3}}{\sqrt{2}}\right.$	
2008 P2	*90 °, 199.5 °, 340.5 °*	
2007 P1Q6	*x = 90, 270*	
2007 P2 Q2	(a) $\sqrt{\frac{1}{2}}$ (b) (i) $\frac{4}{5}$	
2006 P1 Q7	$x = 0, 180, 360, \quad 60, 300$	
2006 P2 Q8	(a) (i) $\sin a° = \frac{1}{\sqrt{5}}$ (ii) $\sin 2a° = \frac{4}{5}$ (b) $\sin 3a° = \frac{11}{5\sqrt{5}}$	
2005 P1 Q9	$\cos(x) = \frac{4}{5}$ $\sin(x) = \frac{3}{5}$	

2005 P2Q2	(a) $\cos(p) = \frac{8}{17}$, $\sin(p) = \frac{15}{17}$ $\cos(q) = \frac{8}{10}$, $\sin(q) = \frac{6}{10}$ From sin(A+B) = sin(A)cos(B) + cos(A)sin(B) $\frac{15}{17} \times \frac{8}{10} + \frac{8}{17} \times \frac{6}{10} = \frac{84}{85}$ (b) (i) $-\frac{13}{85}$ (ii) $-\frac{84}{13}$	
2005 P2 Q8	$k\sin(2x) = \sin(x)$ $k \times 2\sin(x)\cos(x)$ $\sin(x) \times (2k\cos(x) - 1) = 0$ $\sin(x) = 0$ **and** $\cos(x) = \frac{1}{2k}$ $\sin(x) = 0 \Rightarrow x = 0, \pi, 2\pi$ at (O), B and D **and** $\cos(x) = \frac{1}{2k}$ at A and C	
2004 P1	$\cos D\hat{E}A = -\frac{6}{10}$	
2003 P1 Q10	(a) (i) $\frac{4}{5}$ (ii) $\frac{3}{5}$ (b) $\frac{4}{3}$	
2003 P2 Q10	1·23 radians only	
2002W P2	$\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$	

2002 P1 Q3	(*a*) (i) $\sin(2x°)$ (ii) $2\sin(x°)$ (*b*) $4\sin(x°)\cos(x°) - 2\sin(x°) = 0$ $2\sin(x°)(2\cos(x°) - 1) = 0$ $\sin(x°) = 0, \ \ \cos(x°) =$ 0°, 60°, 180°, 300°, 360°	
2002 P1 Q5	• $AC = \sqrt{2}$ **and** $BC = \sqrt{10}$ • $\sin(a+b) = \sin a\cos b + \cos a \sin b$ • $= \frac{1}{\sqrt{2}}.\frac{3}{\sqrt{10}} + \frac{1}{\sqrt{2}}.\frac{1}{\sqrt{10}}$ • $= \frac{4}{\sqrt{20}} = \frac{4}{\sqrt{4}\times\sqrt{5}} = \frac{2}{\sqrt{5}}$	4
2001 P1 Q5	(*a*) 30, 90, 150 (*b*) $\left(150, -\frac{\sqrt{3}}{2}\right)$	
2001 P1 Q7	(*a*) (i) $\sin\left(x + \frac{\pi}{4}\right)$; (ii) $\cos\left(x + \frac{\pi}{4}\right)$ (*b*) (i) $\sin x \cos\frac{\pi}{4} + \cos x \sin\frac{\pi}{4}$ (ii) $x = \frac{\pi}{4}, \frac{3\pi}{4}$	
2000 P1 Q1	$\frac{63}{65}$	
Spec 2 P1 Q7	$\cos x = \frac{2}{\sqrt{11}}$ $\cos 2x = 2 \times \left(\frac{2}{\sqrt{11}}\right)^2 - 1 = -\frac{3}{11}$	
Spec 1 P1 Q4	$\sin x° \cos 30° + \cos x° \sin 30°$ $= \frac{4}{5} \times \frac{\sqrt{3}}{2} + \frac{3}{5} \times \frac{1}{2}$ $= \frac{4\sqrt{3} + 3}{10}$	

Spec 1 P2 Q7	(*a*) $2(1 - 2\sin^2 x°) - \cos^2 x°$ $= 2 - 4\sin^2 x° - \cos^2 x°$ $= 2 - 4\sin^2 x° - (1 - \sin^2 x°)$ $= 1 - 3\sin^2 x°$ (*b*) (i) $3\sin^2 x° + 2\sin x° - 1$ (ii) 19·5	