FP1: Trigonometry

Past Paper Questions
2006 - 2013

Name:

January 2006

3 Find the general solution, in **degrees**, for the equation

$$\sin(4x + 10^\circ) = \sin 50^\circ$$

(5 marks)

June 2006

4 Find, in **radians**, the general solution of the equation

$$\cos 3x = \frac{\sqrt{3}}{2}$$

giving your answers in terms of π. *(5 marks)*

June 2007

6 Find the general solution of the equation

$$\sin\left(2x - \frac{\pi}{2}\right) = \frac{\sqrt{3}}{2}$$

giving your answer in terms of π. *(6 marks)*

January 2008

3 Find the general solution of the equation

$$\tan 4\left(x - \frac{\pi}{8}\right) = 1$$

giving your answer in terms of π. *(5 marks)*

June 2008

5 (a) Find, in **radians**, the general solution of the equation

$$\cos\left(\frac{x}{2} + \frac{\pi}{3}\right) = \frac{1}{\sqrt{2}}$$

giving your answer in terms of π. *(5 marks)*

(b) Hence find the smallest **positive** value of x which satisfies this equation. *(2 marks)*

January 2009

3 Find the general solution of the equation

$$\tan\left(\frac{\pi}{2} - 3x\right) = \sqrt{3}$$

(5 marks)

June 2009

5 (a) Find the general solution of the equation

$$\cos(3x - \pi) = \frac{1}{2}$$

giving your answer in terms of π. *(6 marks)*

(b) From your general solution, find all the solutions of the equation which lie between 10π and 11π. *(3 marks)*

January 2010

3 Find the general solution of the equation

$$\sin\left(4x + \frac{\pi}{4}\right) = 1$$

(4 marks)

June 2010

3 Find the general solution, in degrees, of the equation

$$\cos(5x - 20°) = \cos 40°$$

(5 marks)

January 2011

4 Find the general solution of the equation

$$\sin\left(4x - \frac{2\pi}{3}\right) = -\frac{1}{2}$$

giving your answer in terms of π.

(6 marks)

June 2011

5 (a) Find the general solution of the equation

$$\cos\left(3x - \frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$$

giving your answer in terms of π.

(5 marks)

(b) Use your general solution to find the smallest solution of this equation which is greater than 5π.

(2 marks)

January 2012

6 Find the general solution of each of the following equations:

(a) $\tan\left(\frac{x}{2} - \frac{\pi}{4}\right) = \frac{1}{\sqrt{3}}$;

(4 marks)

(b) $\tan^2\left(\frac{x}{2} - \frac{\pi}{4}\right) = \frac{1}{3}$.

(3 marks)

June 2012

4 Find the general solution, in degrees, of the equation

$$\sin\left(70° - \frac{2}{3}x\right) = \cos 20°$$

(6 marks)

January 2013

3 (a) Find the general solution of the equation

$$\sin\left(2x + \frac{\pi}{4}\right) = \frac{\sqrt{3}}{2}$$

giving your answer in terms of π. *(6 marks)*

(b) Use your general solution to find the exact value of the greatest solution of this equation which is less than 6π. *(2 marks)*

June 2013

3 (a) Find the general solution, in degrees, of the equation

$$\cos(5x + 40°) = \cos 65° \quad \textit{(5 marks)}$$

(b) Given that

$$\sin\frac{\pi}{12} = \frac{\sqrt{3} - 1}{2\sqrt{2}}$$

express $\sin\frac{\pi}{12}$ in the form $\left(\cos\frac{\pi}{4}\right)\left(\cos(a\pi) + \cos(b\pi)\right)$, where a and b are rational. *(3 marks)*