Radians 5B

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

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

c $\sin\frac{11\pi}{6} = \sin\left(2\pi - \frac{\pi}{6}\right) = -\frac{1}{2}$

d $\cos\frac{2\pi}{3} = \cos\left(\pi - \frac{\pi}{3}\right) = -\frac{1}{2}$

e $\cos\frac{5\pi}{3} = \cos\left(2\pi - \frac{\pi}{3}\right) = \frac{1}{2}$

f $\cos\frac{5\pi}{4} = \cos\left(\pi + \frac{\pi}{4}\right) = -\frac{\sqrt{2}}{2}$

g $\tan\frac{3\pi}{4} = \tan\left(\pi - \frac{\pi}{4}\right) = -1$

h $\tan\left(-\frac{5\pi}{4}\right) = -\tan\left(\pi + \frac{\pi}{4}\right) = -1$

i $\tan\frac{7\pi}{6} = \tan\left(\pi + \frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}$

2 a $\sin\frac{7\pi}{3} = \sin\left(2\pi + \frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$

b $\sin\left(-\frac{5\pi}{3}\right) = \sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

c $\cos\left(-\frac{7\pi}{6}\right) = \cos\frac{5\pi}{6} = -\cos\frac{\pi}{6} = -\frac{\sqrt{3}}{2}$

d $\cos\frac{11\pi}{4} = \cos\frac{3\pi}{4} = -\cos\frac{\pi}{4} = -\frac{\sqrt{2}}{2}$

e $\tan\frac{5\pi}{3} = -\tan\frac{\pi}{3} = -\sqrt{3}$

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

3 $AC = \frac{2}{\sin\frac{\pi}{3}} = \frac{2}{\frac{\sqrt{3}}{2}} = \frac{4\sqrt{3}}{3}$

$DC^2 = AD^2 + AC^2$

$= \left(\frac{2\sqrt{6}}{3}\right)^2 + \left(\frac{4\sqrt{3}}{3}\right)^2$

$= \frac{24}{9} + \frac{48}{9} = \frac{72}{9} = 8$

$DC = \sqrt{8} = 2\sqrt{2} = k\sqrt{2}$

So $k = 2$