CHAPTER 3
The trigonometric functions

Radians (1)

QUESTION **1** Complete:

a A radian is a unit used when measuring _____.

b If an arc of a circle of radius 1 unit has length 1 unit, then the angle at the centre measures _____.

c π radians = _____ °

QUESTION **2** Express in radians, in terms of π:

a 45°

b 30°

c 20°

d 15°

e 72°

f 120°

g 150°

h 330°

i 135°

j 108°

k 315°

l 324°

QUESTION **3** Express in radians, correct to three decimal places:

a 56°

b 35°

c 115°

d 160°

e 200°

f 308°

The trigonometric functions

Radians (2)

QUESTION **1** Express in degrees:

a $\frac{\pi}{3}$ **b** $\frac{\pi}{5}$ **c** $\frac{2\pi}{3}$ **d** $\frac{3\pi}{4}$

e $\frac{3\pi}{2}$ **f** $\frac{4\pi}{5}$ **g** $\frac{7\pi}{6}$ **h** $\frac{5\pi}{12}$

i $\frac{7\pi}{4}$ **j** $\frac{5\pi}{6}$ **k** $\frac{4\pi}{3}$ **l** $\frac{13\pi}{12}$

QUESTION **2** Change these radian measures to degrees (to the nearest whole degree):

a 0.576 **b** 1.378 **c** 4.258

QUESTION **3** Find, correct to four decimal places:

a tan 2.786 **b** sin 0.3978 **c** cos 8.2467

d $\sin\frac{\pi}{8}$ **e** $\cos\frac{2\pi}{5}$ **f** $\tan\frac{7\pi}{3}$

Page 60 **1** **a** angles **b** 1 radian **c** 180 **2** **a** $\frac{\pi}{4}$ **b** $\frac{\pi}{6}$ **c** $\frac{\pi}{9}$ **d** $\frac{\pi}{12}$ **e** $\frac{2\pi}{5}$ **f** $\frac{2\pi}{3}$ **g** $\frac{5\pi}{6}$ **h** $\frac{11\pi}{6}$ **i** $\frac{3\pi}{4}$ **j** $\frac{3\pi}{5}$ **k** $\frac{7\pi}{4}$ **l** $\frac{9\pi}{5}$ **3** **a** 0.977 **b** 0.611 **c** 2.007 **d** 2.793 **e** 3.491 **f** 5.376

Page 61 **1** **a** 60° **b** 36° **c** 120° **d** 135° **e** 270° **f** 144° **g** 210° **h** 75° **i** 315° **j** 150° **k** 240° **l** 195° **2** **a** 33° **b** 79° **c** 244° **3** **a** −0.3714 **b** 0.3874 **c** −0.3827 **d** 0.3827 **e** 0.3090 **f** 1.7321