

Trig Equations

(a) $\sin x = 0.911$
 $x = \sin^{-1}(0.911)$
 $x = 65.64$ PV (+ve)

$\frac{S/A}{T/C}$ ✓
 $x = 65.64, 180 - 65.64$
 $x = 65.64, \underline{114.4}$

(b) $\cos x = 0.444$
 $x = \cos^{-1}(0.444)$
 $x = 63.64$ (PV) +ve.

$\frac{S/A}{T/C}$ ✓
 $x = 63.64, 360 - 63.64$
 $x = 63.6, \underline{296.4}$

(c) $\tan x = 3$
 $x = \tan^{-1}(3)$
 $x = 71.57$ (PV +ve)

$\frac{S/A}{T/C}$ ✓
 $x = 71.57, 180 + 71.57$
 $x = 71.6, \underline{251.6}$

(d) $\cos x = -0.605$
 $x = \cos^{-1}(0.605)$ (-ve)
 $x = 52.77$
 $x = 180 - 52.77, 180 + 52.77$

$\frac{S/A}{T/C}$
 $x = 127.2, \underline{232.8}$

$$(e) \tan x = -0.8$$

$$x = \tan^{-1}(0.8) \text{ -ve}$$

$$x = 38.66 \text{ (PV)}$$

S/A
T/C ✓

$$x = 360 - 38.66, 180 - 38.66$$

$$x = \underline{\underline{321.3}}, \underline{\underline{141.3}}$$

$$(f) \sin x = -4/5$$

$$x = \sin^{-1}(4/5) \text{ -ve}$$

$$x = 53.13$$

S/A
T/C ✓

$$x = 180 + 53.1, 360 - 53.1$$

$$x = \underline{\underline{233.1}}, \underline{\underline{306.9}}$$

$$(g) 2\sin x - 1 = 0$$

$$2\sin x = 1$$

$$\sin x = \frac{1}{2}$$

$$x = \sin^{-1}(1/2)$$

$$x = 30^\circ \text{ (PV +ve)}$$

S/A ✓
T/C

$$x = 30^\circ, 180 - 30$$

$$x = \underline{\underline{30^\circ}}, \underline{\underline{150^\circ}}$$

$$(h) 8\cos x + 6 = 0$$

$$8\cos x = -6$$

$$\cos x = -6/8$$

$$x = \cos^{-1}(6/8) \text{ (-ve)}$$

S/A ✓
T/C ✓

$$x = 180 - 41.41, 180 + 41.41$$

$$x = \underline{\underline{138.6}}, \underline{\underline{221.4}}$$

$$(i) 4 \tan x - 3 = 0$$

$$4 \tan x = 3$$

$$\tan x = 3/4$$

$$x = \tan^{-1}(3/4) \quad +ve$$

$$\begin{array}{l} \text{S/A} \\ \hline \text{T/C} \end{array} \checkmark x = 36.87, 180 + 36.87$$

$$x = \underline{\underline{36.9, 216.9}}$$

$$(j) 3 \cos x - 2 = 0$$

$$3 \cos x = 2$$

$$\cos x = 2/3$$

$$x = \cos^{-1}(2/3) \quad +ve.$$

$$\begin{array}{l} \text{S/A} \\ \hline \text{T/C} \end{array} \checkmark x = 48.19, 360 - 48.19$$

$$x = \underline{\underline{48.2, 311.8}}$$

$$(k) 1 + 4 \sin x = 0$$

$$4 \sin x = -1$$

$$\sin x = -1/4$$

$$x = \sin^{-1}(1/4) \quad -ve.$$

$$\begin{array}{l} \text{S/A} \\ \hline \text{T/C} \end{array} \checkmark x = 180 + 14.48, 360 - 14.48$$

$$x = \underline{\underline{194.5, 345.5}}$$

$$(l) 5 \tan x = 3 \tan x - 2$$

$$2 \tan x = -2$$

$$\tan x = -1$$

$$\begin{array}{l} \text{S/A} \\ \hline \text{T/C} \end{array} \checkmark x = \tan^{-1}(1) \quad (-ve)$$

$$x = 180 - 45, 360 - 45$$

$$x = \underline{\underline{135, 315}}$$

Standard deviation Revision

x	$x - \bar{x}$	$(x - \bar{x})^2$
162	3.8	14.44
152	-6.2	38.44
159	0.8	0.64
155	-3.2	10.24
163	4.8	23.04
	<u>0</u>	<u>86.8</u> $\leftarrow \sum (x - \bar{x})^2$

$$\bar{x} = \frac{162 + 152 + 159 + 155 + 163}{5}$$

$$= \frac{791}{5}$$
$$\bar{x} = \underline{\underline{158.2}}$$

$$SD = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} = \sqrt{\frac{86.8}{4}}$$
$$= \sqrt{21.7} = \underline{\underline{4.66}}$$