

# PURE 19 SOLUTIONS

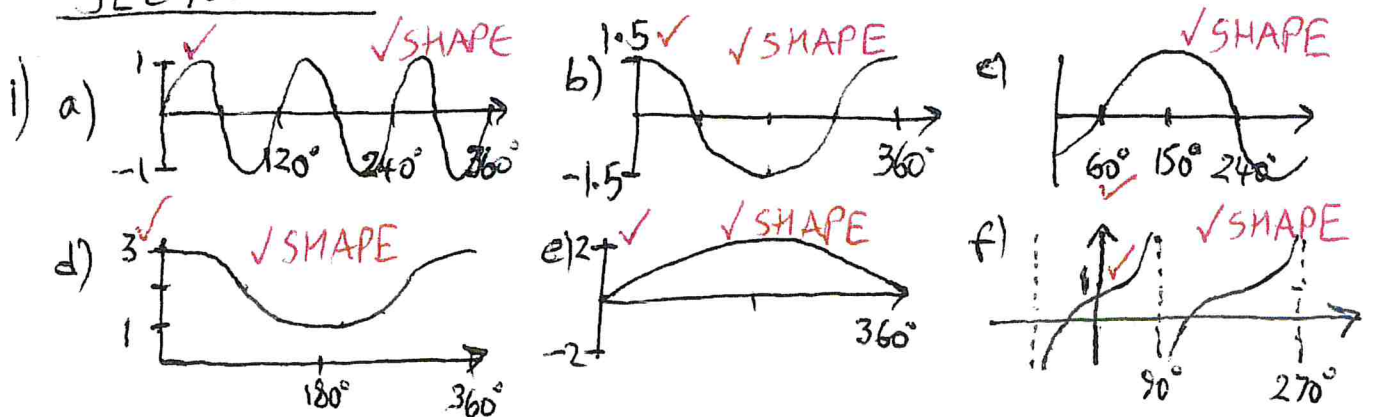
## SECTION 1

KEY:  $\updownarrow$  SHIFT UP/DOWN  $\leftrightarrow$  SHIFT LEFT/RIGHT

- A) 1)  $\uparrow 2$  2) Reflect y-axis  $\left[ \begin{array}{l} \leftarrow \rightarrow \text{ STRETCH IN } x \\ \updownarrow \times \text{ STRETCH IN } y \end{array} \right.$   
 3)  $\downarrow -4$  4)  $\leftarrow -3$  5) Reflect x-axis 6)  $\rightarrow +3$  7)  $\downarrow \times 2$   
 8)  $\leftrightarrow \times \frac{1}{2}$  9)  $\leftrightarrow \times 2$

- B) 1)  $a = 46.6$ ,  $A = 115.2^\circ$ ,  $B = 27.8^\circ$ , AREA = 337  
 2)  $cB = 31$ ,  $A = 93.5^\circ$ ,  $B = 49.5^\circ$ , AREA = 228  
 3)  $b = 51.3$ ,  $c = 57.1$ ,  $B = 62^\circ$ , AREA = 428  
 4)  $B = 70^\circ$ ,  $C = 48^\circ$ ,  $AC = 15.4$ , AREA = 83

## SECTION 2



- 2) a)  $\sin^{-1}(0.37) = 21.7^\circ \checkmark$   $\frac{S}{T/C}$   $180^\circ - 21.7^\circ = 158.3^\circ \checkmark$   
 b)  $\cos^{-1}(0.61) = 52.4^\circ \checkmark$   $\frac{S/A}{T/C}$   $360^\circ - 52.4^\circ = 307.6^\circ \checkmark$   
 c)  $\tan^{-1}(1.2) = 50.2^\circ \checkmark$   $\frac{S/A}{T/C}$   $180^\circ + 50.2^\circ = 230.2^\circ \checkmark$   
 3) a)  $\cos^{-1}(0.9) = 25.8^\circ \checkmark$   $\frac{S/A}{T/C}$   $360^\circ - 25.8^\circ = 334^\circ \checkmark$   
 b)  $\sin^{-1}(0.41) = 24.2^\circ \checkmark$   $\frac{S/A}{T/C}$   $180^\circ - 24.2^\circ = 156^\circ \checkmark$   
 c)  $\tan^{-1}(0.74) = 36.5^\circ \checkmark$   $\frac{S/A}{T/C}$   $180^\circ + 36.5^\circ = 217^\circ \checkmark$   
 4) a)  $2x = \sin^{-1}(-\frac{1}{2}) = -30^\circ, 210^\circ, 330^\circ$   $\frac{S/A}{T/C}$ ,  $570^\circ, 690^\circ$   
 so  $x = 105^\circ, 165^\circ, 285^\circ, 345^\circ \checkmark$   
 b)  $x - 30^\circ = \cos^{-1}(\frac{1}{\sqrt{2}}) = 45^\circ, 315^\circ \Rightarrow x = 75^\circ, 345^\circ \checkmark$   
 $\frac{S/A}{T/C}$   $(360^\circ - 45^\circ)$

$$4c) \frac{1}{2}x = \tan^{-1}(-1) = -45^\circ, 135^\circ, 315^\circ \quad \frac{3A}{7C}$$

$$x = \underline{270^\circ} \quad \checkmark \text{ ONLY, } (\checkmark 270^\circ + \text{OTHER ANS})$$

$$5a) x = \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) = -60^\circ, 240^\circ, 300^\circ \quad \frac{5A}{7C}$$

$$(180+60) \quad (360-60)$$

$$b) 2x = \cos^{-1}\left(\frac{1}{\sqrt{2}}\right) = 45^\circ, 360^\circ - 45^\circ = 315^\circ, 405^\circ, 675^\circ \quad \frac{5A}{7C}$$

$$x = \underline{22.5^\circ, 157.5^\circ}, \underline{202.5^\circ, 337.5^\circ} \quad (+360^\circ)$$

$$c) x + 45^\circ = \tan^{-1}(\sqrt{3}) = 60^\circ, 60+180^\circ = 240^\circ \quad \frac{5A}{7C}$$

$$x = \underline{15^\circ, 195^\circ}$$

$$6a) \text{ for } \sin(t^\circ - k) \text{ Max occurs when } t^\circ - k = 90^\circ$$

$$\Rightarrow 120^\circ - k = 90^\circ \Rightarrow \underline{k = 30^\circ} \quad \checkmark$$

$$b) t=0, y=3 \Rightarrow 3 = A + B \sin(0-30)$$

$$\Rightarrow \underline{3 = A - \frac{1}{2}B} \quad \textcircled{1} \quad \checkmark$$

$$t=120, y=6 \Rightarrow \underline{6 = A + B} \quad \textcircled{2} \quad \checkmark$$

$$c) \quad \textcircled{2} - \textcircled{1} \Rightarrow 3 = \frac{3}{2}B \Rightarrow \underline{B=2} \quad \checkmark \checkmark$$

$$\textcircled{2} \Rightarrow \underline{A=4} \quad \checkmark \checkmark$$

$$d) t-30^\circ = 270^\circ \text{ or } 630^\circ \Rightarrow (300^\circ, 2) \quad (660^\circ, 2)$$

### SECTION 3

$$\overline{PQ} = 90^\circ \text{ so } \underline{a=2} \quad (\sin 2x)$$

$$\text{at } P \quad 0 = \sin(2 \times 18^\circ - b)$$

$$\Rightarrow 2 \times 18^\circ - b = 0$$

$$\Rightarrow \underline{b = 36^\circ}$$