

تارين: ٥٢

تارين 1: اوجد في منه كل س:

$$(1) \quad \text{ظا } 7 \cdot \text{قبا } 20 - \text{ظا } 5 \cdot \text{قبا } 7 =$$

$$= (7 \times 20) - (5 \times 7) =$$

$$= 140 - 35 = 105 = \frac{21}{2} = \frac{7}{2} \cdot 15 = \frac{7}{2} \cdot 3 \cdot 5 =$$

$$(2) \quad \text{حا } 20 + \text{حبا } 20 =$$

$$= \left(\frac{1}{20}\right) + \left(\frac{1}{20}\right) =$$

$$= \frac{1}{10} = \frac{1}{2} + \frac{1}{20} = \frac{10}{20} + \frac{1}{20} = \frac{11}{20}$$

$$(3) \quad \text{ظا } 5 \cdot \text{قبا } 11 - \text{ظا } 7 \cdot \text{قبا } 4 =$$

$$= 55 - 28 = 27 = \frac{27}{1} = \frac{3}{1} \cdot \frac{9}{1} = \frac{3}{1} \cdot 3 \cdot 3 =$$

$$\text{حا } 20 \times \text{قبا } 20 - \text{ظا } 20 \times \text{ظا } 20 =$$

$$(20 \times 20) - (20 \times 20) =$$

$$= (400 - 400) = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(4) \quad \text{قا } 20 - \text{ظا } 20 =$$

$$= (20) - (20) = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(5) \quad \text{قا } (20) - \text{ظا } 12 \cdot \text{حبا } 20 =$$

$$= 20 - 240 = -220 = \frac{-220}{1} = \frac{-220}{1} \cdot \frac{1}{1} = \frac{-220}{1} \cdot 1 = -220$$

$$(6) \quad 7 \cdot \text{ظا } 10 + \text{قا } 20 - \text{قبا } 20 =$$

$$= (7 \times 10) + 20 - 20 = 70 + 20 - 20 = 70 = \frac{70}{1} = \frac{70}{1} \cdot \frac{1}{1} = \frac{70}{1} \cdot 1 = 70$$

$$(7) \quad \text{قا } 20 + \text{حبا } 20 + \text{قبا } 20 =$$

$$= 20 + 20 + 20 = 60 = \frac{60}{1} = \frac{60}{1} \cdot \frac{1}{1} = \frac{60}{1} \cdot 1 = 60$$

تارين 2: اكتب ان:-

$$(1) \quad \text{حبا } 7 \cdot \text{حبا } 20 + \text{حا } 7 \cdot \text{حا } 20 = \frac{7}{2}$$

$$\text{ظا } 20 = \frac{7}{2} \cdot 20 = 70 = \frac{7}{2} \cdot 2 \cdot 10 = \frac{7}{2} \cdot 2 \cdot 2 \cdot 5 = 7 \cdot 10 = 70$$

$$(2) \quad \text{حا } 20 \cdot \text{حبا } 20 + \text{حبا } 20 \cdot \text{حا } 20 = 1$$

$$\text{ظا } 20 = \frac{1}{20} = \frac{1}{2} \cdot \frac{1}{10} = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{5} = \frac{1}{4} \cdot \frac{1}{5} = \frac{1}{20}$$

$$(3) \quad \text{ظا } 5 \cdot \text{ظا } 4 + \text{ظا } 7 \cdot \text{ظا } 20 = 1$$

$$\text{ظا } 5 = \frac{1}{5} = \frac{1}{5} \cdot \frac{1}{1} = \frac{1}{5} \cdot 1 = \frac{1}{5}$$

$$\text{ظا } 4 = \frac{1}{4} = \frac{1}{4} \cdot \frac{1}{1} = \frac{1}{4} \cdot 1 = \frac{1}{4}$$

$$\text{ظا } 7 = \frac{1}{7} = \frac{1}{7} \cdot \frac{1}{1} = \frac{1}{7} \cdot 1 = \frac{1}{7}$$

$$\text{ظا } 20 = \frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

$$(4) \quad 1 + \text{ظبا } 20 = \text{قا } 20 = 20$$

$$1 + \frac{1}{20} = 20 = \frac{20}{1} = \frac{20}{1} \cdot \frac{1}{1} = \frac{20}{1} \cdot 1 = 20$$

$$(5) \quad \text{ظا } 20 = \frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

$$\text{ظا } 10 = \frac{1}{10} = \frac{1}{10} \cdot \frac{1}{1} = \frac{1}{10} \cdot 1 = \frac{1}{10}$$

$$\text{ظا } 20 = \frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

$$(6) \quad \frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

$$\frac{1}{10} = \frac{1}{10} \cdot \frac{1}{1} = \frac{1}{10} \cdot 1 = \frac{1}{10}$$

$$\frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

$$(7) \quad \frac{1}{20} = \frac{1}{20} \cdot \frac{1}{1} = \frac{1}{20} \cdot 1 = \frac{1}{20}$$

تارين 3: اكتب ان:-

$$(1) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(2) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(3) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(4) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(5) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(6) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(7) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

$$(8) \quad \text{ظبا } 20 = \text{قا } 20 - \text{ظا } 20 = 20 - 20 = 0 = \frac{0}{1} = \frac{0}{1} \cdot \frac{0}{1} = \frac{0}{1} \cdot 0 = 0$$

تدريب ١: قيمة كل مما يأتي (مقرَّباً الناتج لأربع منازل عشرية).

(أ)  $\cos^{-1} 0.7380 \approx 46.1^\circ$  و  $\sin^{-1} 0.7380 \approx 46.1^\circ$   
 $\cos^{-1} 0.7380 \rightarrow 46.1^\circ$   
 $\sin^{-1} 0.7380 \rightarrow 46.1^\circ$

(ب)  $\cos^{-1} 0.7380 \approx 46.1^\circ$  و  $\sin^{-1} 0.7380 \approx 46.1^\circ$   
 $\cos^{-1} 0.7380 \rightarrow 46.1^\circ$   
 $\sin^{-1} 0.7380 \rightarrow 46.1^\circ$

تدريب ٣: قياس  $\theta$  بالدرجات  $\theta \in [0, 360]$  مقرَّباً الناتج إلى منزلة عشرية واحدة.

(أ)  $\theta = 52^\circ$   
 الرقم  $\rightarrow \sin \rightarrow \text{Shift}$   
 $\approx 0.7880105$   
 ::  $\theta < 90^\circ$  تقع في الربع ١ و ٢  
 وقت  $(\hat{\theta}) = 52^\circ$   
 أوقات  $(\hat{\theta}) = 180^\circ - 52^\circ = 128^\circ$

(ب)  $\cos^{-1} 0.4701 \approx 61.2^\circ$  و  $\tan^{-1} 1.12 \approx 48.1^\circ$   
 $\cos^{-1} 0.4701 \rightarrow 61.2^\circ$   
 $\tan^{-1} 1.12 \rightarrow 48.1^\circ$

(ج)  $\cos^{-1} 0.4701 \approx 61.2^\circ$  و  $\tan^{-1} 1.12 \approx 48.1^\circ$   
 $\cos^{-1} 0.4701 \rightarrow 61.2^\circ$   
 $\tan^{-1} 1.12 \rightarrow 48.1^\circ$

(د)  $\cos^{-1} 0.9320 \approx 20.3^\circ$  و  $\tan^{-1} 0.32 \approx 17.7^\circ$   
 $\cos^{-1} 0.9320 \rightarrow 20.3^\circ$   
 $\tan^{-1} 0.32 \rightarrow 17.7^\circ$

(هـ)  $\cos^{-1} 0.9320 \approx 20.3^\circ$  و  $\tan^{-1} 0.32 \approx 17.7^\circ$   
 $\cos^{-1} 0.9320 \rightarrow 20.3^\circ$   
 $\tan^{-1} 0.32 \rightarrow 17.7^\circ$

(ب)  $\theta = 90^\circ$   
 الرقم  $\rightarrow \tan \rightarrow \text{Shift}$   
 $\approx 0.1646090$

::  $\theta > 90^\circ$  تقع في الربع ٢ و ٣  
 وقت  $(\hat{\theta}) = 180^\circ - 90.9^\circ = 89.1^\circ$   
 أوقات  $(\hat{\theta}) = 180^\circ + 89.1^\circ = 269.1^\circ$

تدريب ٤: قيمة كل مما يأتي (مقرَّباً الناتج لأربع منازل عشرية).

(أ)  $\cos^{-1} 0.4318 \approx 64.2^\circ$  و  $\cos^{-1} 0.4318 = x^{-1}$   
 $\cos^{-1} 0.4318 \rightarrow 64.2^\circ$   
 $\cos^{-1} 0.4318 = x^{-1}$

(ب)  $\cos^{-1} 0.4318 \approx 64.2^\circ$  و  $\cos^{-1} 0.4318 = x^{-1}$   
 $\cos^{-1} 0.4318 \rightarrow 64.2^\circ$   
 $\cos^{-1} 0.4318 = x^{-1}$

(ج)  $\cos^{-1} 0.4318 \approx 64.2^\circ$  و  $\cos^{-1} 0.4318 = x^{-1}$   
 $\cos^{-1} 0.4318 \rightarrow 64.2^\circ$   
 $\cos^{-1} 0.4318 = x^{-1}$

(د)  $\cos^{-1} 0.4318 \approx 64.2^\circ$  و  $\cos^{-1} 0.4318 = x^{-1}$   
 $\cos^{-1} 0.4318 \rightarrow 64.2^\circ$   
 $\cos^{-1} 0.4318 = x^{-1}$

(هـ)  $\cos^{-1} 0.4318 \approx 64.2^\circ$  و  $\cos^{-1} 0.4318 = x^{-1}$   
 $\cos^{-1} 0.4318 \rightarrow 64.2^\circ$   
 $\cos^{-1} 0.4318 = x^{-1}$

(ب)  $\theta = 74^\circ$   
 الرقم  $\rightarrow \cos \rightarrow \text{Shift}$   
 $\approx 0.9702957$

::  $\theta > 90^\circ$  تقع في الربع ٢ و ٣  
 وقت  $(\hat{\theta}) = 180^\circ - 74.9^\circ = 105.1^\circ$   
 أوقات  $(\hat{\theta}) = 180^\circ + 105.1^\circ = 285.1^\circ$

(ج)  $\theta = 74^\circ$   
 الرقم  $\rightarrow \tan \rightarrow \text{Shift}$   
 $\approx 3.280617$

::  $\theta < 90^\circ$  تقع في الربع ١ و ٢  
 وقت  $(\hat{\theta}) = 74.3^\circ$   
 أوقات  $(\hat{\theta}) = 180^\circ + 74.3^\circ = 254.3^\circ$