0512 週考解析

一、填充題 A

	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$\sin\theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0
$\cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0	1
$\tan\theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	不存在	0	不存在	0

二、填充題 B

2. $y=\sin x$ 的週期為 2π　設圖中函數為 $y=\sin ax$.

圖中的函數圖形從 0 到 π 後再次循環. $\therefore T=\pi$

$\therefore x\cdot\pi=2\pi$　$\therefore x=2$.

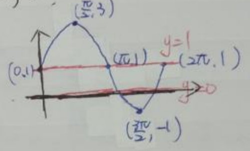
$\therefore y=\sin 2x$ ※

3. $y=2\sin x+1$, $0\le x<2\pi$　$y=1$, $y=0 \Rightarrow a, b$.

$a=2 \Rightarrow$ 圖形伸長2倍

$d=1 \Rightarrow$ 圖形向上平移1單位

$\Rightarrow$ graph:



$\therefore a=3$. $b=2$ $\Rightarrow a+b=5$ ※

4. $y=\sin 2x$　　$y=2\tan x$.

$\therefore \alpha=2$.　　$\therefore \beta=1$　　$\therefore a+2b=\pi+2\pi$

$\therefore 2T=2\pi$　　$\therefore \tan x$ 週期不變　　$=3\pi$ ※

$\therefore T=\pi$　　$\therefore b=\pi$

5. $3\tan^2 x-10\tan x+3=0$.

十字交乘.

$1\ -\ 3$　　$\therefore (\tan x-3)(3\tan x-1)=0$

$3\ -\ 1$

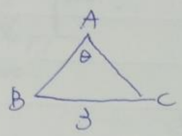
$\therefore \tan x=3, \frac{1}{3}$ ※ (沒說範圍就是 $0\le x<2\pi$).

6. △ABC的外面=9π. $\overline{BC}=3$.

<sol>

$R^2\pi=9\pi$

∴ $R=3$.

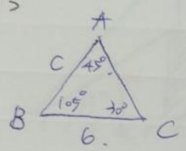


$\frac{\overline{BC}}{\sin A}=2R$ (By 正弦定理).

∴ $\frac{3}{\sin A}=2\cdot3$. ∴ $\sin A=\frac{3}{6}=\frac{1}{2}$ ※

7. $a=6$. $\angle B=105^\circ$ $\angle C=30^\circ$

<sol>



∴ $\angle A=45^\circ$.

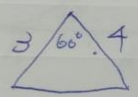
∴利用正弦定理: $\frac{6}{\sin45^\circ}=\frac{\overline{AB}}{\sin30^\circ}$

$\frac{6}{\frac{\sqrt{2}}{\cancel{2}}}=\frac{\overline{AB}}{\frac{1}{\cancel{2}}}\Rightarrow\sqrt{2}\,\overline{AB}=6$

∴ $\overline{AB}=\frac{6}{\sqrt{2}}=\frac{6\sqrt{2}}{2}=3\sqrt{2}$ ※

8. 3m. 4m. $\theta=60^\circ$

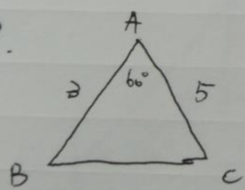
<sol>



∴ $\triangle=\frac{1}{2}\cdot3\cdot4\sin60^\circ=\frac{1}{\cancel{2}}\cdot3\cdot\cancel{4}\cdot\frac{\sqrt{3}}{\cancel{2}}$

$=3\sqrt{3}$ ※

9.



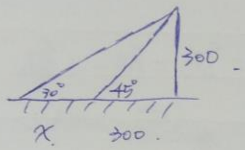
<sol> 两边夹角求3th.

∴ $\cos A=\frac{b^2+c^2-a^2}{2bc}$. $\cos60^\circ=\frac{3^2+5^2-\overline{BC}^2}{2\cdot3\cdot5}$.

$\frac{1}{\cancel{2}}=\frac{34-\overline{BC}^2}{\cancel{2}\cdot15}$

∴ $\overline{BC}^2=19$ ∴ $\overline{BC}=\sqrt{19}$ ※

10 <sol>



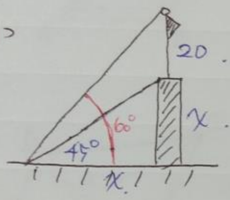
$\therefore \tan 30^\circ = \dfrac{300}{x+300}$

$\dfrac{\sqrt{3}}{3} = \dfrac{300}{x+300}$

$\sqrt{3}x + 300\sqrt{3} = 900$

$\sqrt{3}x = 900 - 300\sqrt{3} \Rightarrow x = 300\sqrt{3} - 300$ #

11. <sol>



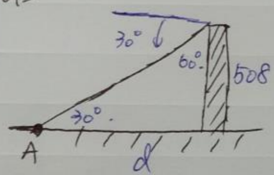
$\tan 60^\circ = \dfrac{x+20}{x}$

$\sqrt{3} = \dfrac{x+20}{x} \Rightarrow \sqrt{3}x - x = 20$

$20 = x(\sqrt{3}-1)$

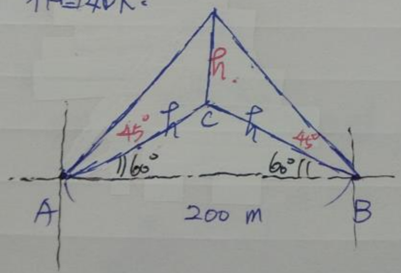
$\therefore x = \dfrac{20}{\sqrt{3}-1} \cdot \dfrac{\sqrt{3}+1}{\sqrt{3}+1} = \dfrac{20\sqrt{3}+20}{2} = 10\sqrt{3}+10$ #

12 <sol>



$\therefore d = 508\sqrt{3}$ #

13. 作图如下：



$\therefore \triangle ABC$ 为正三角形

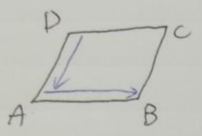
$\therefore h = 200\text{ m}$ #

14. <sol>

$\vec{AB} = -\vec{BA} = \vec{DC} = -\vec{CD}$

$\therefore$ Ans: (D) ※

15. <sol>



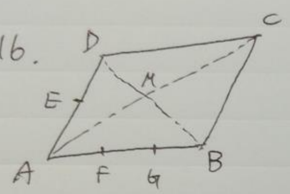
$\vec{AB} - \vec{AD}$

$= \vec{AB} + \vec{DA}$

$= \vec{DB}$

$\therefore$ Ans: (A) ※

16.



<sol>

$\vec{AD} + \vec{AB} = \vec{AC}$

$\therefore 2\vec{AM} = \vec{AD} + \vec{AB}$

$\therefore \vec{AM} = \frac{1}{2}\vec{AD} + \frac{1}{2}\vec{AB}$

$= \frac{1}{2}\cdot 2\vec{AE} + \frac{1}{2}\cdot 3\vec{AF}$

$= \vec{AE} + \frac{3}{2}\vec{AF}$ $\therefore (\alpha, \beta) = (1, \frac{3}{2})$ ※

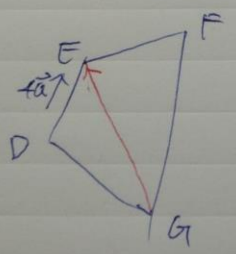
17. $\vec{DE} = 4\vec{a}$

$\vec{DF} = 3\vec{b} - \vec{a}$

$\vec{FG} = -\vec{b} + 4\vec{c}$

<sol>

DEFG可形成任意四邊形



$\vec{GE} = \vec{GF} + \vec{FE}$

$= -\vec{FG} + \vec{FE}$

$\because \vec{DF} = \vec{DE} + \vec{EF}$

$3\vec{b} - \vec{a} = 4\vec{a} + \vec{EF}$

$\therefore \vec{EF} = 3\vec{b} - 5\vec{a}$ $\therefore \vec{FE} = 5\vec{a} - 3\vec{b}$

$\therefore \vec{GE} = \vec{b} - 4\vec{c} + 5\vec{a} - 3\vec{b} = 5\vec{a} - 2\vec{b} - 4\vec{c}$ ※