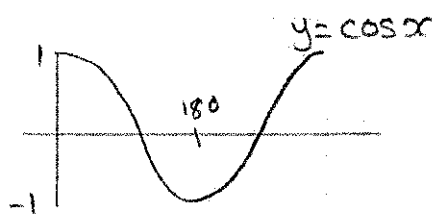


⑬ $f(x) = 5 \cos 2x$

$$\begin{aligned} f(90) &= 5 \cos 2(90) \\ &= 5 \cos 180 \\ &= 5(-1) \\ &= \underline{\underline{-5}} \end{aligned}$$



2

⑭ $10x^2 + 11x - 6 = 0$

$$(5x - 2)(2x + 3) = 0$$

$$\downarrow$$

$$5x - 2 = 0$$

$$5x = 2$$

$$x = \frac{2}{5}$$

$$\downarrow$$

$$2x + 3 = 0$$

$$2x = -3$$

$$x = -\frac{3}{2}$$

$$\begin{array}{r|rr} & 5x & -2 \\ 2x & 10x^2 & -4x \\ +3 & 15x & -6 \end{array}$$

3

Paper 2

① $100\% - 28\%$
 $= 72\%$
 $= 0.72$

$$\begin{aligned} &22600 \times 0.72^3 \\ &= 84\frac{3}{5} \cdot 4048 \\ &\approx \underline{\underline{\pounds 8440}} \end{aligned}$$

4

② $a^2 = b^2 + c^2 - 2bc \cos A$
 $= 5^2 + 4^2 - 2(5)(4) \cos 106$
 $a = \sqrt{52.02}$
 $= 7.212...$
 $\approx \underline{\underline{7.2 \text{ cm}}}$

3

③ $LSF = \frac{8}{12}$
 $= \frac{2}{3}$

$$VSF = \left(\frac{2}{3}\right)^3$$

$$\begin{aligned} Vol &= \left(\frac{2}{3}\right)^3 \times 540 \\ &= \underline{\underline{160 \text{ ml}}} \end{aligned}$$

3

④ (a) $5c + 6p = 45$ ①

(b) $7c + 4p = 52$ ②

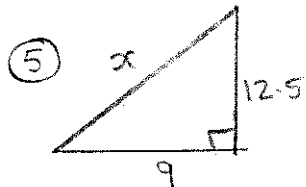
(c) ① $\times 2$: $10c + 12p = 90$ ③

② $\times 3$: $21c + 12p = 156$ ④

④ - ③: $11c = 66$
 $c = 6$

Sub $c=6$ into ①: $5(6) + 6p = 45$
 $30 + 6p = 45$
 $6p = 15$
 $p = \frac{5}{2}$

$$\begin{aligned} &10c + 8p \\ &= 10(6) + 8\left(\frac{5}{2}\right) \\ &= 60 + 20 \\ &= \underline{\underline{80 \text{ minutes}}} \end{aligned}$$



$$\begin{aligned}
 x^2 &= 9^2 + 12.5^2 \\
 x &= \sqrt{237.25} \\
 x &= 15.402... \\
 x &\approx \underline{\underline{15.4 \text{ cm}}}
 \end{aligned}$$

3

⑥(a) $V = \frac{4}{3} \pi r^3$

$$\begin{aligned}
 &= \frac{4}{3} \times \pi \times 5^3 \\
 &= \frac{500}{3} \pi \\
 &= 523.598... \\
 &\approx 523.6 \text{ cm}^3
 \end{aligned}$$

(b) $V = \frac{1}{3} \pi r^2 h$

$$\begin{aligned}
 \frac{500\pi}{3} &= \frac{1}{3} \pi (6)^2 h \\
 \frac{500}{36} &= h \\
 h &= 13.88... \\
 h &\approx \underline{\underline{13.9 \text{ cm}}}
 \end{aligned}$$

$$\begin{aligned}
 V &= \frac{1}{3} \pi r^2 h \\
 523.6 &= \frac{1}{3} \pi \times 6^2 h \\
 \text{or } 523.6 &= 12 \pi h \\
 h &= \frac{523.6}{12 \pi} \\
 h &= 13.888... \\
 h &\approx \underline{\underline{13.9 \text{ cm}}}
 \end{aligned}$$

5

⑦ Short sides | long side

$$\begin{array}{c|c}
 88^2 + 105^2 & 137^2 \\
 \hline
 = 18769 & 18769
 \end{array}$$

$88^2 + 105^2 = 137^2 \therefore$ The triangle is right angled.

3

⑧ $5 \tan x + 3 = 4$

$$\begin{aligned}
 \tan x &= \frac{1}{5} \\
 \text{RA} &= \tan^{-1}\left(\frac{1}{5}\right) \\
 &= 11.3^\circ
 \end{aligned}$$

$$\frac{s}{\sqrt{t}} \bigg| \frac{A}{c}$$

$$\begin{aligned}
 \text{1st Quad: } &11.3 \\
 \text{3rd Quad: } &180 + 11.3 = 191.3
 \end{aligned}$$

$$\underline{\underline{x = 11.3^\circ, 191.3^\circ}}$$

3

⑨ $\frac{x^2 - 81}{5} \div \frac{x + 9}{2}$

$$\begin{aligned}
 &= \frac{(x+9)(x-9)}{5} \times \frac{2}{x+9} \\
 &= \underline{\underline{\frac{2(x-9)}{5}}}
 \end{aligned}$$

3

⑩ Area of Sector: $\frac{\theta}{360} = \frac{1}{\pi r^2} = \frac{a}{\pi r^2}$

$$\frac{72}{360} = \frac{a}{11^2 \pi}$$

$$a = \frac{11^2 \pi \times 72}{360} = 76.0265...$$

Area of $\Delta = \frac{1}{2} ab \sin C$

$$= \frac{1}{2} \times 11^2 \times \sin 72$$

$$= 57.5389...$$

Area of segment = $76.0265 - 57.5389$

$$= 18.487...$$

$$\approx \underline{\underline{18.5 \text{ cm}^2}}$$

⑪ $\frac{a^{17}}{(3a^4)^3} = \frac{a^{17}}{27a^{12}} = \underline{\underline{\frac{a^5}{27}}}$

⑫ $\cos x \sin^2 x + \cos^3 x$
 $= \cos x (\sin^2 x + \cos^2 x)$
 $= \cos x (1)$
 $= \underline{\underline{\cos x}}$

⑬ (a) length = $6 + 2x$ (b) $A = lb$
 $17 = (6 + 2x)(2 + x)$
 $17 = 12 + 6x + 4x + 2x^2$
 $0 = 2x^2 + 10x - 5$

(c) $a = 2$
 $b = 10$
 $c = -5$
 $\Delta = b^2 - 4ac$
 $= 10^2 - 4(2)(-5)$
 $= 100 + 40$
 $= 140$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{-10 \pm \sqrt{140}}{4}$$

$$= 0.458,$$

 $\approx \underline{\underline{0.46 \text{ m}}}$

~~-5.458~~

(

(