

Answers: MATH 001 June 2004 Exam

For full solutions, see the MATH 001 noticeboard.

(Displayed for a limited time only.)

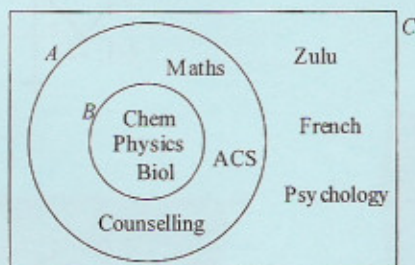
Question 1:

a) (i) A (ii) $\{ \}$ (iii) A

b) $X = Y$

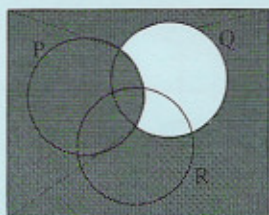
c) (i) C (ii)

(iii) 3



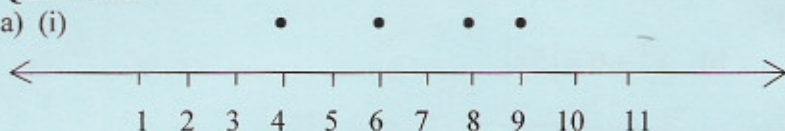
d) (i)

(ii) $(X \cap Y) \cap Z'$



Question 2:

a) (i)



(ii)



b) (i) 1,38427, $\sqrt{16}$, $\frac{121}{11}$

(ii) $\sqrt{2}$, 1,38427, $\sqrt{16}$, $\frac{121}{11}$

(iii) $\frac{121}{11}$

(iv) $\sqrt{2}$,

(v) $\sqrt{-9}$

c) (i) $2p + 1$

(ii) Proof

Question 3:

a) $(t(s+t) + \frac{1}{2}\pi^2)\text{mm}^2$

b) $\left(\frac{21}{2}\pi + 12\right)\text{m}$

c) (i) $6a^3\left(\sqrt{3} - \frac{\pi}{4}\right)\text{units}^3$

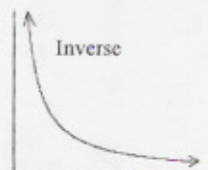
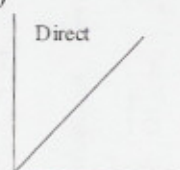
(ii) $a^2\left(36 + 2\sqrt{3} + \frac{11\pi}{2}\right)\text{units}^2$

(iii) I p^3

II p^2

Question 4:

- a) 640 km
(iii)
- b) (i) Direct (ii) Inverse



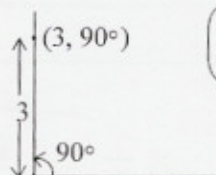
(iv) Multiplied by 4

(v) Divide length by 3.

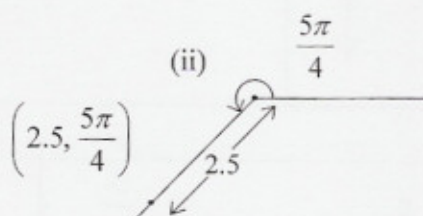
Question 5:

- a) (i) D (3, 5, 2) (ii) 6 (iii) 7 units (iv) $y = 5$ (v) $y = 2$
(vi) I the line DE
II A line parallel to the z -axis passing through (3, 5, 2), for example.
OR DE extended in both directions.

b) (i)



(ii)



Question 6:

- a) (i) A. Infinite number of solutions, B. No solutions.
(ii) Only possible to complete solutions for A.
 $(7 - 8t, 2t - 3, t) \quad t \in \mathbb{R}$
- b) (i) Length is 14 m, width is 11 m
(ii) Proof
(iii) 64 km

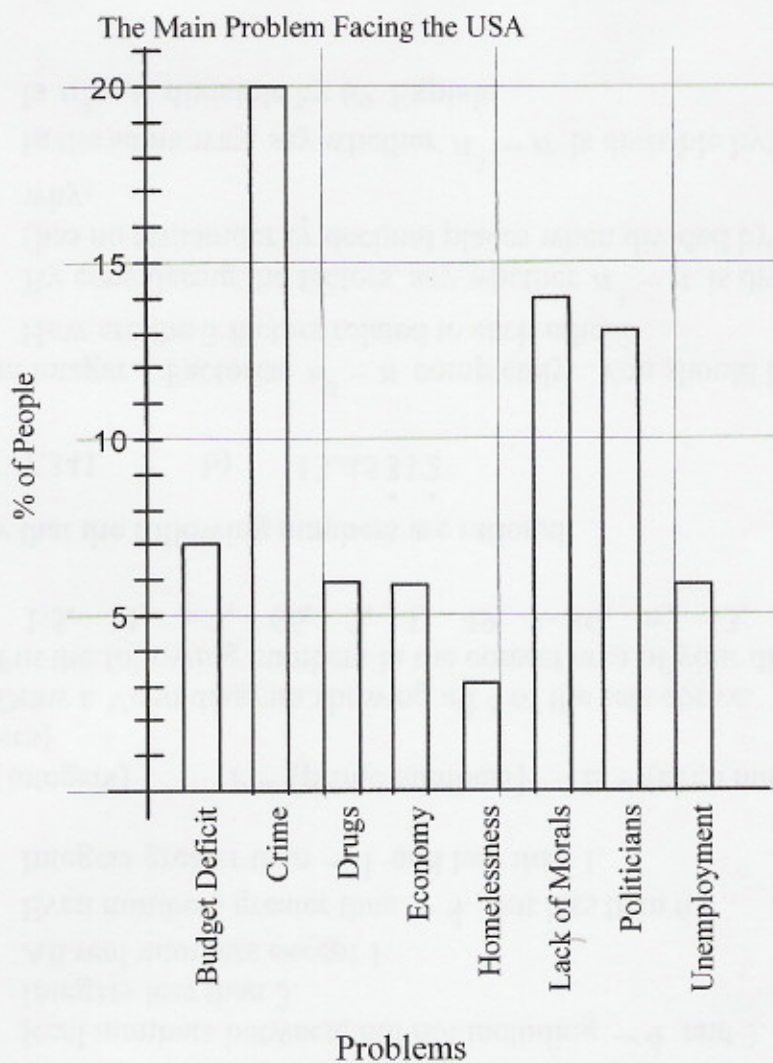
Question 7:

- a) (i) $x \in \left(-\frac{8}{5}, \frac{14}{5}\right]$ (ii) $\{x \in \mathbb{R} \mid 1 < x \leq 2\}$
- b) $x \in \left(-\infty, -\frac{11}{5}\right) \cup \left(-\frac{3}{2}, 2\right)$

Question 8:

- a) (i) 3rd quadrant $A = -125^\circ$
(ii) $s = 7.07$ cm (correct to 3 significant figures)
- b) (i) $\tan A = -\frac{2}{3}$, $\csc A = -\frac{\sqrt{13}}{2}$
(ii) $\sin B = -\frac{2\sqrt{13}}{13}$ (iii) Proof
(iv) $\sin^2 A$
- c) (i) 0.9720 (ii) 1.2540 (iii) 0.3249
- d) $\theta = 1.176$ (correct to 4 significant figures)

Question 9:



- b) pie chart
- c) Some people did not know, or some people gave other answers not listed here.