

9th - CBSE
CT-3M - Solution
Section: A

1) $-2.1, -2.2, -2.3$

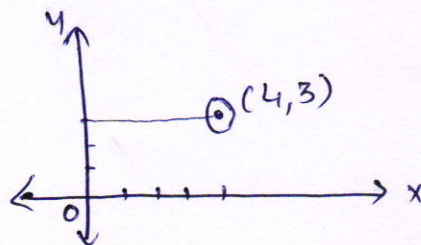
2) $\sqrt{7}$

3) $x = -d$

4) $(x-20^\circ) + x = 180^\circ$
 $2x - 20^\circ = 180^\circ$
 $2x = 200^\circ$
 $x = 100^\circ$

$\therefore \boxed{x - 20^\circ = 80^\circ}$

5) \perp distance from
y-axis = 4 units
= (abscissa)



6) Area of equilateral triangle = $\frac{\sqrt{3}}{4} a^2$
 $= \frac{\sqrt{3}}{4} \times 4\sqrt{3} \times 4\sqrt{3}$
 $= 12\sqrt{3}$ ~~sq. units~~

Section: B

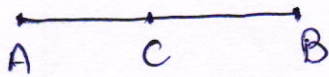
7) $\frac{1}{2} = 0.5$, $\frac{1}{3} = 0.\bar{3}$
Two irrationals between $\frac{1}{2}$ & $\frac{1}{3}$ are:
 $0.369259815 \dots$
 $0.4210210021000 \dots$

8) $(3x - 58^\circ) + (x + 38^\circ) = 180^\circ$
 $4x - 20^\circ = 180^\circ$
 $4x = 200^\circ$
 $\boxed{x = 50^\circ}$

\therefore supplementary angles

The angles are: $3x - 58^\circ = 92^\circ$
 $\& x + 38^\circ = 58^\circ$

9)



$$\begin{aligned} AB &= AC + CB \\ &= AC + AC \\ &= 2AC \end{aligned}$$

$$\therefore AC = CB$$

$$\therefore \boxed{AC = \frac{1}{2} AB}$$

$$\begin{aligned} 10) \quad \sqrt{2}x^2 + 3x + \sqrt{2} &= \sqrt{2}x^2 + x + 2x + \sqrt{2} \\ &= \sqrt{2}x(\sqrt{2}x + 1) + \sqrt{2}(\sqrt{2}x + 1) \end{aligned}$$

$$\therefore \boxed{\sqrt{2}x^2 + 3x + \sqrt{2} = (\sqrt{2}x + 1)(x + \sqrt{2})}$$

$$\begin{aligned} 11) \quad x &= 3 + \sqrt{8} \\ \frac{1}{x} &= \frac{1}{3 + \sqrt{8}} \times \frac{3 - \sqrt{8}}{3 - \sqrt{8}} \\ &= \frac{3 - \sqrt{8}}{9 - 8} \end{aligned}$$

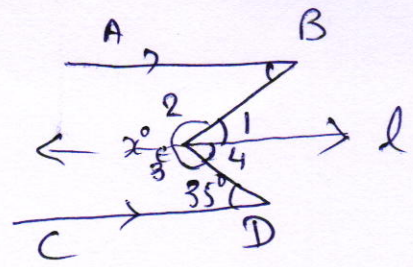
$$\therefore \frac{1}{x} = 3 - \sqrt{8}$$

$$\begin{aligned} \rightarrow x^2 + \frac{1}{x^2} &= \left(x + \frac{1}{x}\right)^2 - 2 \\ &= (3 + \sqrt{8} + 3 - \sqrt{8})^2 - 2 \\ &= 6^2 - 2 \\ &= 36 - 2 \\ &= 34 \end{aligned}$$

$$\begin{aligned} \therefore \left(x + \frac{1}{x}\right)^2 &= x^2 + 2 \cdot x \cdot \frac{1}{x} + \frac{1}{x^2} \\ &= x^2 + \frac{1}{x^2} + 2 \end{aligned}$$

12) AS $AB \parallel CD$.

Construct a line l , parallel to both AB & CD as shown in figure.



→ AS $AB \parallel l$,

$$\angle B = \angle 1$$

$$\therefore \angle 1 = 40^\circ$$

$$\rightarrow \angle 1 + \angle 2 = 180^\circ$$

$$\therefore \angle 2 = 140^\circ$$

→ ALSO, $l \parallel CD$

$$\therefore \angle 4 = 35^\circ$$

$$\rightarrow \angle 3 + \angle 4 = 180^\circ$$

$$\therefore \angle 3 = 145^\circ$$

$$\rightarrow \angle x^\circ = \angle 2 + \angle 3$$
$$= 140^\circ + 145^\circ$$

$$\therefore \boxed{\angle x^\circ = 285^\circ}$$

∴ Alternate interior angles

∴ Supplementary angles

∴ Alternate ^{int.} angles

∴ Supplementary angles