

***FINAL REVISION***

***GEOMETRY***

***FORM 10***

***SECOND TERM***

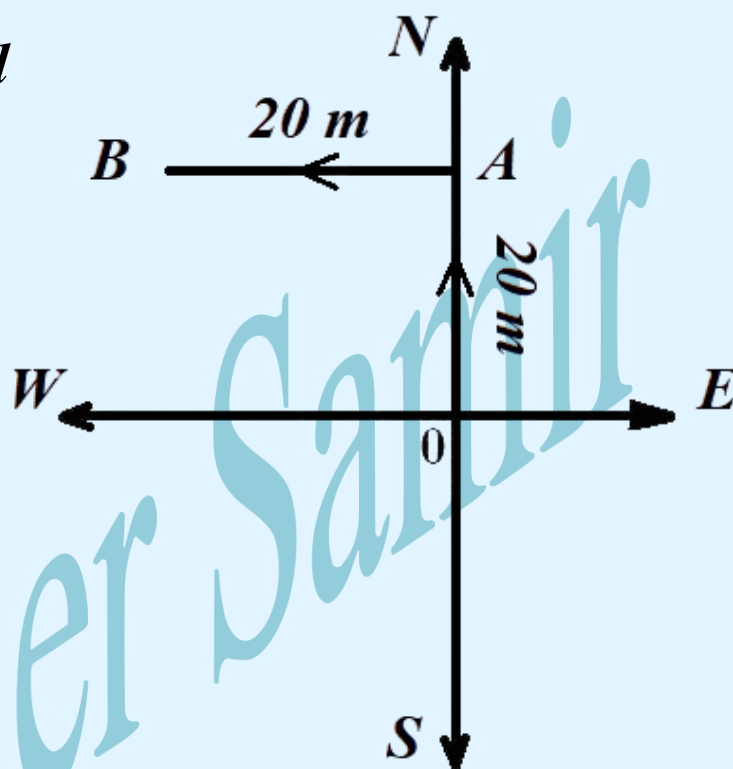
***Mr. Samer***

## Final Revision Geometry Form "10"

1. Choose the correct answer:

1) From  $O \rightarrow A \rightarrow B$  ; total displacement = .....

- a) 40 m in west
- b) 40 m west/north
- c)  $20\sqrt{2}$  m west/north
- d)  $20\sqrt{2}$  m west/south



2) In the parallelogram  $ABCD$ ,  $\overline{AC} \cap \overline{BD} = \{M\}$ , then

$$\overrightarrow{AB} + \overrightarrow{AD} = \dots\dots\dots$$

a)  $\overrightarrow{CA}$

b)  $\overrightarrow{BD}$

c)  $2 \overrightarrow{MC}$

d)  $2 \overrightarrow{DM}$

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3)  $A (-2, 1)$ ,  $B (2, 3)$ ,  $C (-2, -4)$ , then the magnitude of the angle between  $\overrightarrow{AB}$ ,  $\overrightarrow{BC}$  is .....

a)  $\tan^{-1} \left( \frac{2}{3} \right)$

b)  $\tan^{-1} \left( \frac{2}{3} \right)$

c)  $\tan^{-1} \left( \frac{3}{4} \right)$

d)  $\tan^{-1} \left( \frac{4}{3} \right)$

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4) *ABCDEF* is a regular hexagon, which of the following is *Not* equivalent?

a)  $\overrightarrow{AB}, \overrightarrow{FM}$

b)  $\overrightarrow{AB}, \overrightarrow{ED}$

c)  $\overrightarrow{AB}, \overrightarrow{MC}$

d)  $\overrightarrow{AB}, \overrightarrow{MD}$

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5) The magnitude of the angle between:  $y = 3$  and  $\sqrt{3}x - y = 4$  is .....

a)  $30^\circ$

b)  $45^\circ$

c)  $60^\circ$

d)  $90^\circ$

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6)  $ABCD$  is a square,  $A (2, -3)$ , equation of  $\overleftrightarrow{CD}$  is  $3x - 4y + 12 = 0$ , then its area = .....

a) 4

b) 9

c) 16

d) 25

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7)  $\overrightarrow{xy} = (2, 3)$ ,  $\overrightarrow{yz} = (4, 5)$ , then  $\overrightarrow{zx} = \dots\dots\dots$

a)  $(6, 8)$

b)  $(8, 6)$

c)  $(-8, -6)$

d)  $(-6, -8)$

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8) The equation of a line // y-axis and passes (2 , -3) is ..

a)  $\vec{r} = (2, -3) + t(1, 0)$

b)  $\vec{r} = (3, 2) + t(0, 1)$

c)  $\vec{r} = (2, -3) + t(0, 7)$

d)  $\vec{r} = (-3, 2) + t(0, 1)$

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9)  $\vec{A} = (-10, K)$ ,  $\vec{B} = 3\vec{j} + \vec{i}$ ,  $\vec{A} \perp \vec{B}$ , then  $K = \dots\dots\dots$

a) -30

b)  $\frac{10}{3}$

c)  $\frac{3}{10}$

d) 30

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**10)  $(3, -4)$  is a direction vector of  $(L)$ , then all of the following are direction vectors except .....**

- a)  $(-3, 4)$       b)  $(9, -12)$       c)  $(3, 4)$       d)  $(1.5, -2)$**

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11)  $\overrightarrow{V_A} = 25 \overrightarrow{e}$  ,  $\overrightarrow{V_B} = -10 \overrightarrow{e}$  ,  $\overrightarrow{V_{AB}} = \dots\dots\dots \overrightarrow{e}$

a) 35  
•

b) -35

c) 15

d) -15

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12) .....  $\in L: \vec{r} = (-2, 1) + t(1, -3)$

a)  $(\frac{-5}{3}, -2)$

b)  $(\frac{-3}{2}, \frac{1}{2})$

c)  $(\frac{3}{2}, \frac{-1}{2})$

d)  $(\frac{-7}{3}, 2)$

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13)  $\vec{A} = (3, -2)$  ,  $\vec{B} = (7, 1)$  , then:  $\|\vec{A} + 2\vec{B}\| = \dots\dots\dots$   
unit length.

a) 11

b) 17

c) 14

d)  $5\sqrt{2}$

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14) If  $\vec{d} = (3, 4)$  is a direction vector of  $L$ , then its slope = .....

a)  $\frac{4}{3}$

b)  $-\frac{3}{4}$

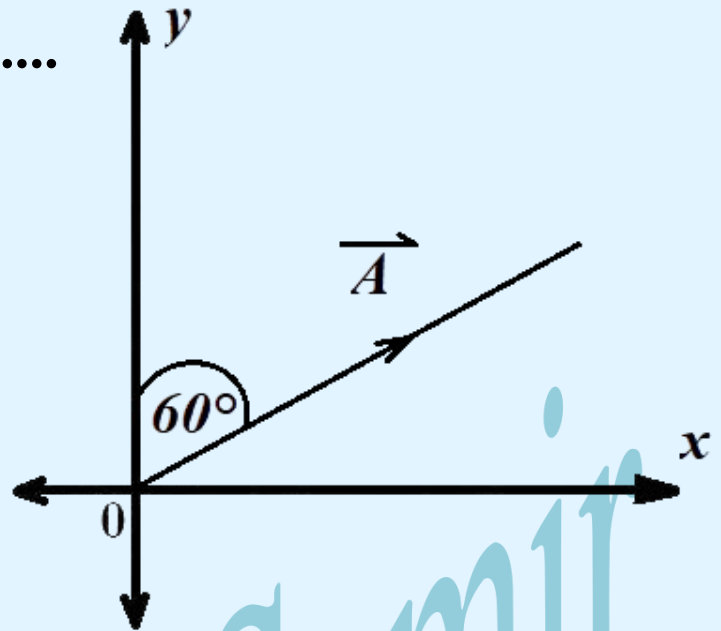
c)  $\frac{-4}{3}$

d)  $\frac{3}{4}$

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15)  $\|\vec{A}\| = 4$  , then  $\vec{A} = \dots\dots\dots$

- a)  $(2, 2\sqrt{3})$
- b)  $(2\sqrt{3}, 2)$
- c)  $(4, \sqrt{3})$
- d)  $(4, 4)$



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16) The  $\perp$  direction vector on the line:  $x = 3 + 2K$  ,  
 $y = 4 - K$  is .....

- a) (2 , 10)      b) (1 , 2)      c) (2 , 1)      d) (3 , 4)

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17)  $M$  is the mid-point of  $\overline{XY}$ , then:  $\overrightarrow{XM} + \overrightarrow{YM} = \dots\dots\dots$

a)  $2 \overrightarrow{XM}$

b)  $2 \overrightarrow{YM}$

c)  $\overrightarrow{XY}$

d)  $\vec{0}$

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18)  $\|\vec{A}\| = \|\vec{B}\|$  , then .....

a)  $\vec{A} = \vec{B}$

b)  $\vec{A} = -\vec{B}$

c)  $\vec{A} \parallel \vec{B}$

d) can't find relation  
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19) The equation of the straight line passing  $(2, -3)$  and  
 //  $x$ -axis is .....

a)  $y = -3$

b)  $x = 2$

c)  $x = -3$

d)  $y = 2$

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20)  $\vec{A} = (3, 5)$ ,  $\vec{B} = (-1, m)$ ,  $\|\vec{AB}\| = 4$ , then  $m = \dots\dots\dots$

a)  $\pm 5$

b) 5

c) -1

d) zero

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- 21) If the measure of the included angle between the two straight lines:  $x = 7$ ,  $y = ax + 2$  equals  $90^\circ$ , then  $a = \dots$
- a) zero                      b) 1                      c) 90                      d) -1

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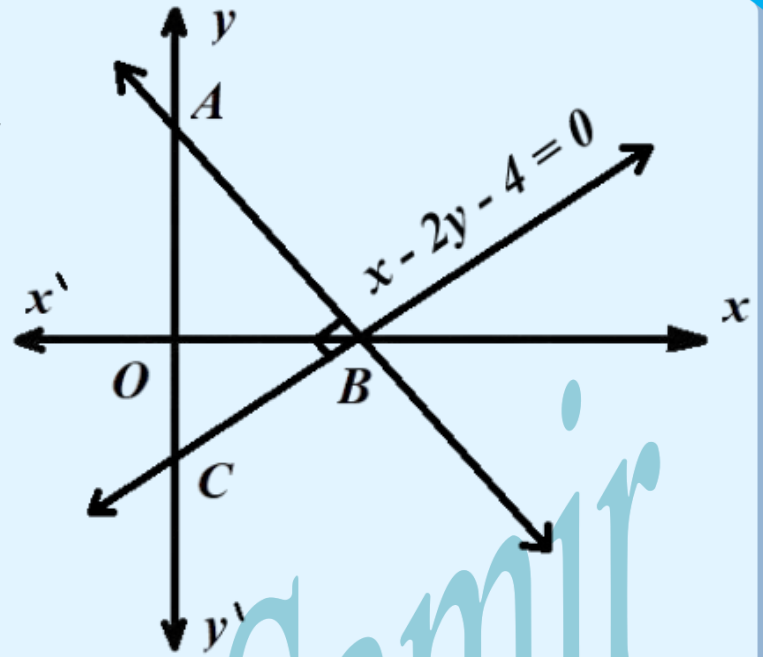
22) In the opposite figure:

The area of  $\triangle ABC$  equals

..... square unit.

a) 15                      b) 20

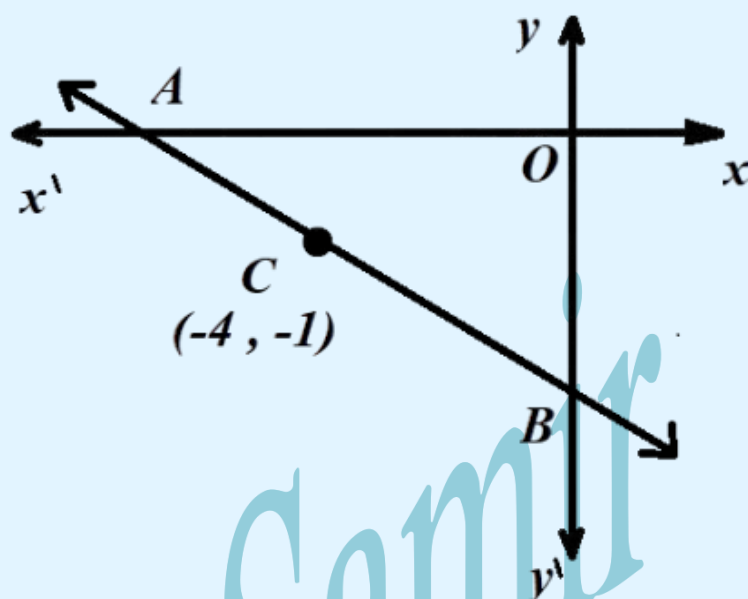
c) 24                      d) 32



23) In the opposite figure:

If  $BC = 2CA$  , then the equation of the straight line  $\overleftrightarrow{AB}$  is .....

- a)  $x + 2y + 6 = 0$
- b)  $x - 2y - 6 = 0$
- c)  $2x + y + 9 = 0$
- d)  $x - 3y + 1 = 0$





**24) The measure of the obtuse angle included between the two straight lines:**

$$y = (2 - \sqrt{3})(x + 5), y = (2 + \sqrt{3})(x - 7) \text{ is } \dots\dots\dots$$

- a)  $150^\circ$       b)  $60^\circ$       c)  $135^\circ$       d)  $120^\circ$**

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25) The slope of the straight line whose parametric equations are:  $x = -4 + 2k$  and  $y = 1 + 10k$  is .....

a) 5

b) -5

c) -4

d) 4

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26) The two vectors  $\vec{A} = (3, m)$  and  $\vec{B} = -9\vec{i} + 12\vec{j}$  are parallel, then  $m = \dots$

a) -6

b) -4

c) 4

d) 6

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27) If the vector  $\vec{A} = -12\vec{i} + 12\vec{j}$ , then the polar form of  $\vec{A} = \dots\dots\dots$

a)  $(12, \frac{\pi}{4})$

b)  $(12\sqrt{2}, \frac{\pi}{4})$

c)  $(12\sqrt{2}, \frac{3\pi}{4})$

d)  $(12\sqrt{2}, \frac{5\pi}{4})$

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28)  $\|6k \vec{A}\| = \|-18 \vec{A}\|$  , then  $k = \dots\dots\dots$

a) 3

b) -3

c)  $\pm 18$

d)  $\pm 3$

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29) If  $ABCD$  is a parallelogram,  $A(1, 2)$ ,  $B(x, -3)$ ,  $C(-7, y)$ ,  $D(-3, 5)$ , then  $x + y = \dots\dots\dots$

a) -5

b) 3

c) 4

d) -3

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30) If the forces  $\vec{F}_1 = a \vec{i} - \vec{j}$ ,  $\vec{F}_2 = 2 \vec{i} + 5 \vec{j}$ ,  $\vec{F}_3 = \vec{i} + b \vec{j}$  are in equilibrium, then  $a - b = \dots\dots\dots$

a) 4

b) 7

c) -5

d) 1

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31)  $\overrightarrow{AD} = \frac{1}{2}\overrightarrow{BC}$  , then  $\overrightarrow{BC} + 2\overrightarrow{DC} = \dots\dots\dots$

a)  $4\overrightarrow{AB}$

b)  $\overrightarrow{DB}$

c)  $2\overrightarrow{AC}$

d)  $\overrightarrow{BC}$

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32)  $X$ -axis divides  $\overline{AB}$  by ratio ..... where  $A (6, -2)$ ,  
 $B (5, 3)$

a) 2:3 int.

b) 3:2 ext.

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c) 3:1 ext.

d) 2:3 ext.

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33)  $\overrightarrow{AB} = (3, 3)$ ,  $\overrightarrow{BC} = \vec{j}$ , then:  $\|\overrightarrow{AC}\| = \dots\dots\dots$

a)  $3\sqrt{2}$

b)  $4\sqrt{2}$

c) 7

d) 8

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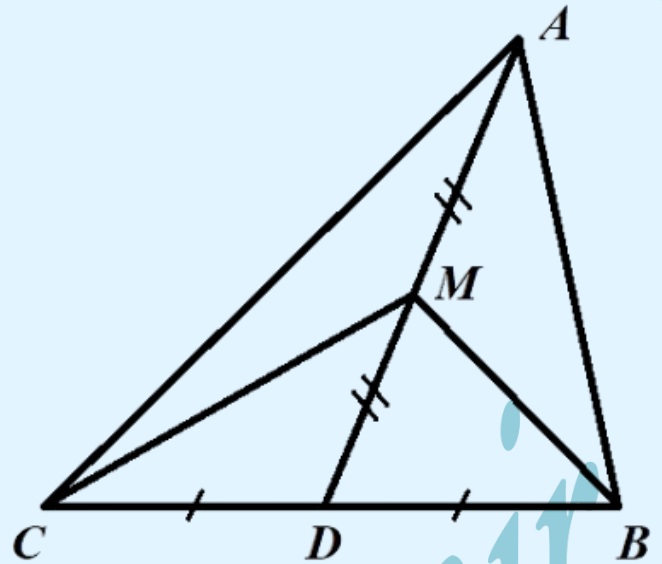
34)  $\overrightarrow{AB} + \overrightarrow{AC} = \dots\dots\dots$

a)  $2 \overrightarrow{AM}$

b)  $\overrightarrow{AD}$

c)  $4 \overrightarrow{AM}$

d)  $2 \overrightarrow{MD}$



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35)  $\vec{A} = (5, 2)$ ,  $\vec{B} = (2, 5)$ , then  $\overrightarrow{BA} = \dots\dots\dots$

a)  $(3\sqrt{2}, \frac{7\pi}{4})$

b)  $(3, \frac{7\pi}{4})$

c)  $(3\sqrt{2}, \frac{3\pi}{4})$

d)  $(3, \frac{\pi}{4})$

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36) The angle between  $L_1 : x + 2y + 5 = 0$  and

$L_2 : \vec{r} = (1, 4) + K(1, 2)$  is ....

a)  $135^\circ$

b)  $45^\circ$

c)  $0^\circ$

d)  $90^\circ$

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**37) The length of perpendicular drawn from the origin to  $L: 3x = 10 + 4y$  is ..... unit length.**

**a) 4**

**b) 3**

**c) 2**

**d) 1**

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38)  $A (3, 2)$ ,  $B (5, 6)$ , then  $x$ -axis divides  $\overrightarrow{BA}$  in ratio ...

a) 5:2 ext.

b) 1:3 int.

c) 2:5 int.

d) 3:1 ext.

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39) If  $\vec{A} \parallel \vec{B}$ ,  $\vec{A} = 3\vec{j} + \vec{i}$ , and  $\vec{B} = (-10, \ell)$ , then  $\ell = \dots$

a) -30

b) 6

c) -6

d) 3

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40) All of the following are unit vectors except .....

- a)  $(1, 1)$       b)  $(0, 1)$       c)  $(1, 0)$       d)  $(\frac{3}{5}, \frac{4}{5})$

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41) The measure of the angle between  $3x = 7$  ,  $y - 2 = 0$  is ....

a)  $0^\circ$

b)  $90^\circ$

c)  $180^\circ$

d)  $45^\circ$

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42)  $ABCD$  is parallelogram

$\overline{AC} \cap \overline{BD} = \{M\}$ , then

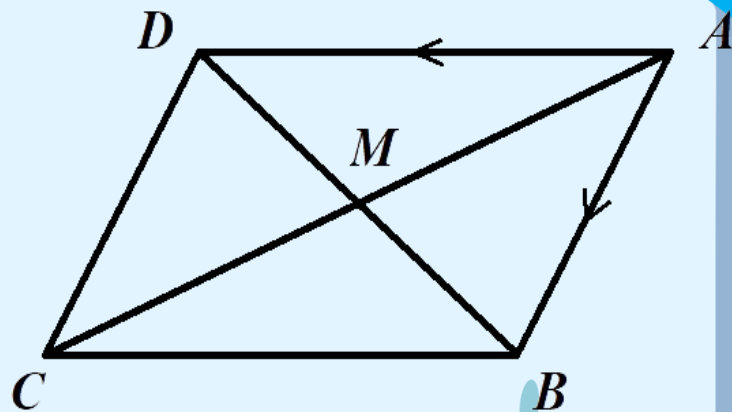
$\overrightarrow{AB} + \overrightarrow{AD} = \dots\dots$

a)  $2 \overrightarrow{MC}$

b)  $\overrightarrow{CA}$

c)  $\overrightarrow{BD}$

d)  $2 \overrightarrow{DM}$



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43)  $\|12\vec{A}\| = 2 \|K\vec{A}\|$  , then  $K = \dots\dots\dots$

a)  $\pm 12$

b)  $\pm 6$

c) 6

d) -6

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44) Area of  $\Delta ABC$  with vertices  $(1, 6)$ ,  $(0, 10)$  and  $(0, 0)$  is .....

a) 10

b) 5

c) 15

d) 12

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**45) Equation of a straight line which passes the point  $(-1, 4)$  and parallel to  $x$ -axis is .....**

- a)  $x = -1$       b)  $y = 4$       c)  $x - 1 = 0$       d)  $y + 4 = 0$**

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46) If  $\vec{A} + \vec{B} = (9, 11)$ ,  $\vec{B} = (6, 7)$ , then  $\|\vec{A}\| = \dots\dots\dots$

a) 3

b) 4

c) 5

d) 6

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47) The coordinates of point  $C$  which divides  $\overline{AB}$  by ratio  $2:1$  internally when  $A = (2, -1)$ ,  $B = (5, -4)$  is ....

- a)  $(-4, 3)$                       b)  $(4, 3)$   
 c)  $(4, -3)$                       d)  $(-4, -3)$

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48) In the opposite figure:

$ABCD$  is a rectangle,  $H$  is

a midpoint of  $\overline{AD}$ , then

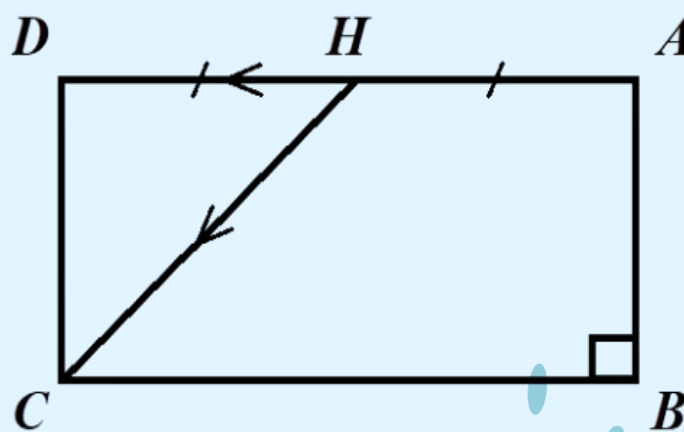
$$\overrightarrow{HC} + \overrightarrow{HD} = \dots\dots\dots$$

a)  $\overrightarrow{AC}$

b)  $\overrightarrow{CA}$

c)  $\overrightarrow{DC}$

d)  $\overrightarrow{CD}$



49) If  $C$  is the midpoint of  $\overline{AB}$  where  $A (1, 2)$  and  $B (3, 8)$ , then point  $C$  is .....

- a)  $(2, 5)$       b)  $(3, 4)$       c)  $(4, 5)$       d)  $(4, 7)$

•

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50) The straight line:  $y = 3x + 5$  cuts y-axis at the point .....

a) (3 , 5)

b) (0 , 5)

c) (1 , 3)

d) (0 , 0)

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51) The slope of straight line:  $2x - y = 1$  is .....

a) 2

b) 1

c) -1

d) 0.5

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**52) The measure of the angle between two lines  $x = 2$  and  $y = 3$  is ....°**

**a) 30**

**b) 45**

**c) 60**

**d) 90**

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**53) The length of the perpendicular which drawn from the point (3 , 5) on  $x$ -axis is ..... units.**

**a) 3**

**b) 4**

**c) 5**

**d) 8**

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54) If  $\vec{A} = (1, 2)$ ,  $\vec{B} = (4, 6)$ , then  $\|\vec{AB}\| = \dots\dots\dots$  units.

a) 3

b) 5  
•

c) 10

d) 12

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**55)  $ABCD$  is a parallelogram in which  $A (2, -3)$ ,  
 $B (5, 1)$  and  $C (6, 7)$ , then the point  $D = \dots\dots\dots$**

- |                                |                               |
|--------------------------------|-------------------------------|
| <b>a) <math>(3, 1)</math></b>  | <b>b) <math>(1, 3)</math></b> |
| <b>c) <math>(-1, 3)</math></b> | <b>d) <math>(3, 3)</math></b> |

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56) If  $\overrightarrow{V_C} = -4 \hat{c}$  ,  $\overrightarrow{V_{CB}} = 7 \hat{c}$  , then  $\overrightarrow{V_B} = \dots\dots\dots$

a)  $3 \hat{c}$

b)  $-3 \hat{c}$

c)  $11 \hat{c}$

d)  $-11 \hat{c}$

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**57) The length of perpendicular drawn from the origin point to the straight line  $3x - 4y - 15 = 0$  equals ..... length unit**

**a) 3**

**b) 13**

**c) 4**

**d) 5**

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- 58) The coordinates of point  $C$  which divides  $\overline{AB}$  internally in ratio  $1 : 2$  where  $A(5, -6)$ ,  $B(-1, 3)$  is .....
- a)  $(0, 0)$       b)  $(3, -3)$       c)  $(-3, -3)$       d)  $(3, 3)$

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59) The measure of the acute angle between the straight lines equations  $\sqrt{3}x - y = 4$  ,  $y = 3$  equals .....

a)  $30^\circ$

b)  $45^\circ$

c)  $60^\circ$

d)  $90^\circ$

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60) If the two straight lines:  $2x + ay + 3 = 0$ ,

$\vec{r} = (2, -1) + k(1, 3)$  are perpendicular, then:  $a = \dots\dots$

a) 6

b) -6

c) 1

d) -1

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**61) The equation of the straight line passes through the point (4 , 1) and is parallel to the straight line**

**$3x + y + 4 = 0$  is .....**

**a)  $x + y = 5$**

**b)  $3x + y - 13 = 0$**

**c)  $x + 3y = 9$**

**d)  $2x + y - 9 = 0$**

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62) The straight line whose equation:

$\vec{r} = (-1, 3) + k(2, 4)$  passes through the point .....

- a) (2, 5)      b) (-3, -1)      c) (0, 2)      d) (1, 4)

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63) The vector equation of the straight line which passes through the point  $(2, 3)$  and parallel y-axis is .....

a)  $\vec{r} = (2, 3) + k(0, 1)$

b)  $\vec{r} = (2, 3) + k(1, 0)$

c)  $\vec{r} = k(2, 3)$

d)  $\vec{r} = k(1, 0)$

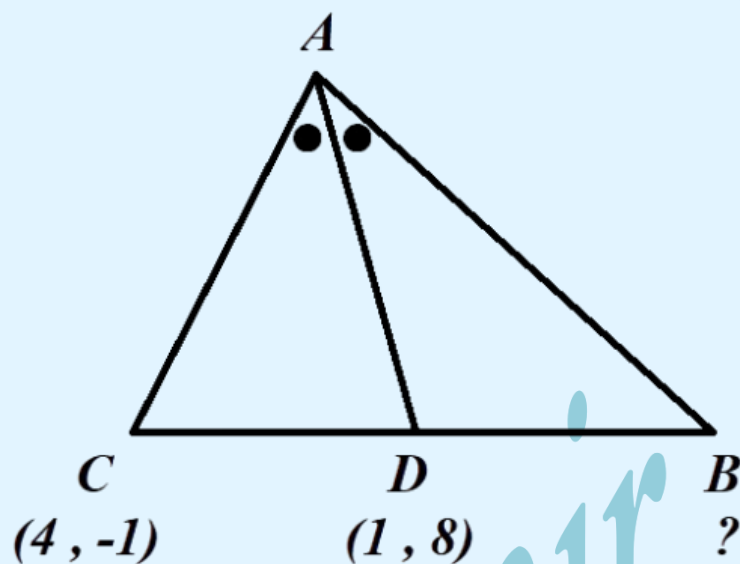
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## 2. Essay Questions:

1)  $4AC = 3AB$ , find the coordinates of point  $B$

(Ans:  $B = (-3, 20)$ )



2)  $\overrightarrow{AB} = (4\sqrt{3}, 4)$ , find its polar form

(Ans:  $\overrightarrow{AB} = (8, \frac{\pi}{6})$ )

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3)  $ABCD$  is a quad. where:  $\overrightarrow{BC} = 3\overrightarrow{AD}$

prove:  $\overrightarrow{AC} + \overrightarrow{BD} = 4\overrightarrow{AD}$

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**4) Find the distance between:**

$$L_1: 3x - 4y + 20 = 0, \quad 3x - 4y + 10 = 0$$

**(Ans: 2 units)**

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5) The measure of the angle between:

$L_1: \vec{r} = (3, 1) + k(2, 1)$ ,  $L_2: 2x + y + 5 = 0$  is .....

(Ans:  $90^\circ$ )

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6)  $\vec{A} = (K, 2)$ ,  $\vec{B} = (2, K)$  and  $\vec{A} \parallel \vec{B}$ , then  $K = \dots\dots\dots$

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**7) Write different forms of a straight line which passes  
(0 , -2) and perpendicular to L:  $2x - 4y + 1 = 0$**

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8) The centroid of  $\Delta ABC = \dots$  where  $A (0, 3)$ ,  $B (6, 0)$  and  $C (9, 15)$

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9) Area of  $\Delta$  between the two axes and  $L : \frac{x}{3} - \frac{y}{4} = 1$  is  
 .....  $cm^2$

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**10) The polar form of  $(-3, 3)$  is .....**

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**11) Parametric equation of  $L$ : which passes through  $A = (2, -1)$  and  $B = (2, 4)$  is .....**

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12)  $\vec{A} = (5, \frac{5\pi}{6})$  in terms of the fundamental unit vectors  
is .....

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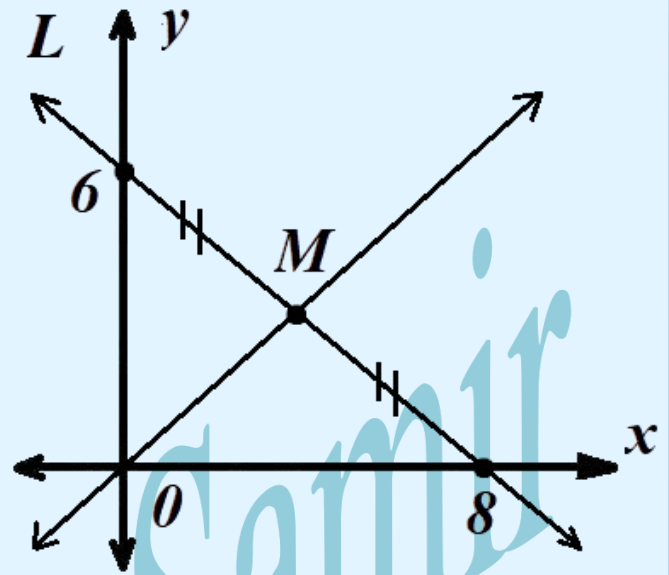
13)  $B(0, 3)$ ,  $C(3, 0)$  and  $A$  lies at third of distance from  $B$  to  $C$ ,  $A = \dots\dots\dots$

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14) i- The equation of  $L$  is  $\frac{x}{\dots} + \frac{y}{\dots} = 1$

ii-  $M = (\dots, \dots)$

iii- V. equation of  $\overleftrightarrow{OM}$  is .....



15)  $\overrightarrow{AB} = (2, 1)$ ,  $B(3, -1)$ , then  $\|\overrightarrow{A}\| = \dots\dots\dots$

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**16) Write different forms of the equation of a straight line which passes (2 , 3) and perpendicular to :**

$$\vec{r} = (2, 5) + K(-2, 1)$$

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**17) Solve:  $2x - y = 3$  and  $x + y - 3 = 0$  using:**

***1<sup>st</sup> Matrices , 2<sup>nd</sup> Cramer's law***

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18)  $\triangle ABC$  in which  $D \in \overline{BC}$ ,  $2DB = 3DC$ , then prove  
that:  $2\overrightarrow{AB} + 3\overrightarrow{AC} = 5\overrightarrow{AD}$

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**19) Find the vector equation of the straight line which passes through  $(-2, 1)$  and passes through the point of intersection of  $L_1: x + y - 3 = 0$  and  $L_2: 2x + y = 5$**

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20) Find the general equation of straight line which passes through the point of intersection of  $L_1: x + y - 2 = 0$  and of  $L_2: \vec{r} = (1, 1) + t(-2, 4)$  and perpendicular to  $L_3: 2x - 3y + 1 = 0$

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**21) If  $ABCD$  is a quadrilateral in which  $A(1, -2)$ ,  $B(9, 0)$ ,  $C(8, 4)$  and  $D(0, 2)$ , prove using vectors that:  $ABCD$  is a rectangle**

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