Activities to be done using the application GEOGEBRA :

Click on the link to open the app: (https://www.geogebra.org/classic?lang=en)

i) Locate the points (5, 0), (0, 5), (2, 5), (5, 2), (–3, 5), (–3, –5), (5, –3) and (6, 1) in the Cartesian plane.

ii) Plot the following points on the cartesian plane using Geogebra.

x	1	2	3	4	5
y	5	8	11	14	17

Join these points. What do you observe?

After doing the above two activities on Geogebra click the picture .

Solve the following Questions.

1)

Simplify the following:

$(i)\left(4\sqrt{3}-2\sqrt{2}\right)\left(3\sqrt{2}+4\sqrt{3}\right)$

$(ii)\left(2+\sqrt{3}\right)\left(3+\sqrt{5}\right)$

$(iii)\left(\sqrt{3}+\sqrt{2}\right)^{2}$

$(iv)\left(\dfrac{2}{3}\sqrt{7}-\dfrac{1}{2}\sqrt{2}+6\sqrt{11}\right)+\left(\dfrac{1}{3}\sqrt{7}+\dfrac{3}{2}\sqrt{2}-\sqrt{11}\right)$

2) Rationalise the following denominator.

$(i)\ \dfrac{2}{\sqrt{3}-\sqrt{5}}$ $(ii)\ \dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ $(iii)\ \dfrac{6}{\sqrt{5}+\sqrt{2}}$ $(iv)\ \dfrac{1}{8+5\sqrt{2}}$

3) If $a=6-\sqrt{35}$, find the value of $a^{2}+\dfrac{1}{a^{2}}$.

4) If $x = 3 + \sqrt{8}$, find the value of (i) $x^2 + \dfrac{1}{x^2}$ and (ii) $x^4 + \dfrac{1}{x^4}$

5) Find five rational numbers between 4/5 and 7/5.

6) Represent the real number $\sqrt{7}$ on number line.

7) Show that 1.272727... can be expressed in the form p/q where p and q are integers and q≠0.

8) Simplify :

$$(256)^{\left(-4^{\frac{-3}{2}}\right)}$$

9) Factorize the following: $9x^2 + 6x + 1 - 25y^2$.

10) Find the value of a if x + 6 is a factor of $x^3 + 3x^2 + 4x + a$.

11) Factorise:
(i) $x^3 + 216y^3 + 8z^3 - 36xyz$
(ii) $a^3 - 64b^3 - 27c^3 - 36abc$

12) Check whether g(x) is a factor of p(x) or not, where $p(x) = 8x^3 - 6x^2 - 4x + 3$, $g(x) = \dfrac{x}{3} - \dfrac{1}{4}$.

13) Find the value of k, if x − 1 is a factor of $4x^3 + 3x^2 - 4x + k$.

14) Expand the following :
(i) $(4a - b + 2c)^2$
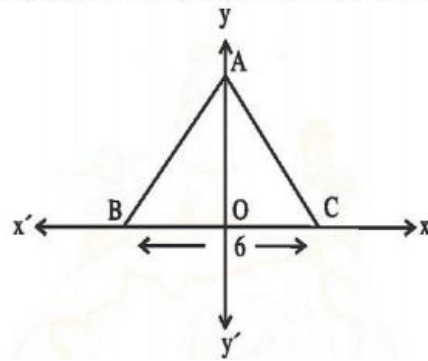(ii) $(3a - 5b - c)^2$

15) By Remainder Theorem find the remainder, when p(x) is divided by g(x), where
(i) $p(x) = x^3 - 2x^2 - 4x - 1$, $g(x) = x + 1$
(ii) $p(x) = x^3 - 3x^2 + 4x + 50$, $g(x) = x - 3$

16) ABC is an equilateral triangle as shown in the figure. Find the coordinates of its vertices.

17) Write the coordinates of the following points:
   (i) lying on both axes
   (ii) lying on x-axis and with x-coordinate 4
   (iii) lying on y-axis with y-coordinate –3.

18) Find the following product :$(2x - y + 3z)(4x^2 + y^2 + 9z^2 + 2xy + 3yz - 6xz)$

19) On environment day, class-9 students got five plants of mango, silver oak, orange, banyan and amla from soil department. Students planted the plants and noted their locations as (x, y).Observing the below given graph, answer the following
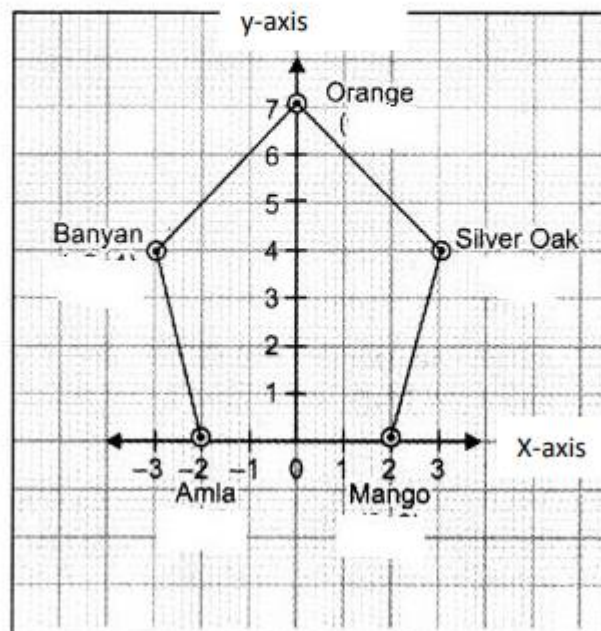
i) The above graph is of which type of polygon

    (A) Pentagon   (B) Hexagon   (C) Heptagon   (D) Quadrilateral

ii) In the given figure ,The abscissa of point, where the Amla tree planted   is
  (A) 2   (B) - 2   (C) 0   (D) -3

iii) The distance of Silver Oak tree from x-axisis

    (A) 3 unit   (B) 4 unit   (C) -3 unit   (D) None

iv) The coordinate of location point of orange tree

   (A) (0,7)   (B) (7,7)   (C) (0,0)   (D) (7,0)

v) The coordinates ,Where the line joining the location points of Banyan and Silver Oak tree meet the y-axis
(A) (4,0)   (B) (4,4)   (C) (-4 ,4)   (D) (0,4)