Random Vector Assignment

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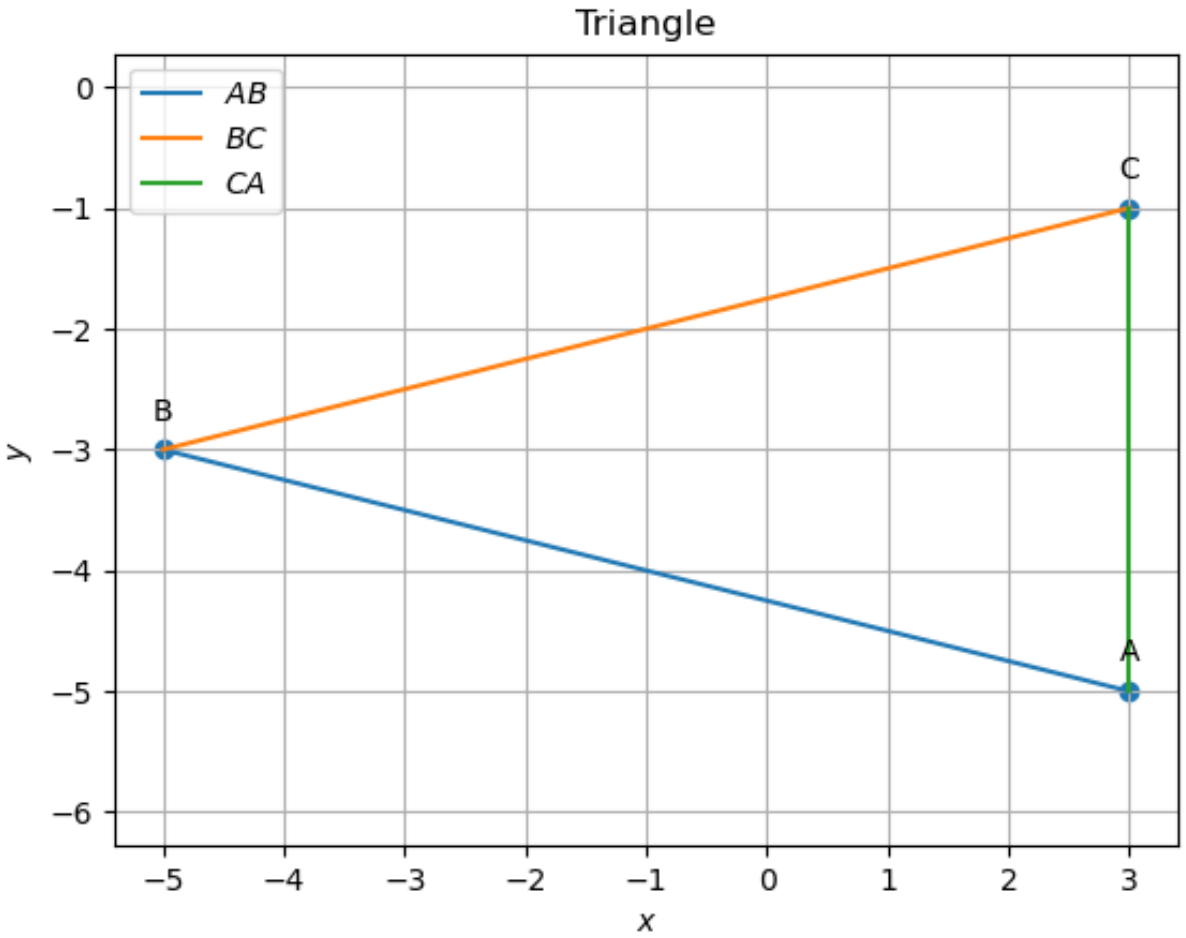

Fig. .1. Triangle generated using python

parameter	value	description
Co ordinates	$\begin{pmatrix} 3 \\ -5 \end{pmatrix}$	A
Co ordinates	$\begin{pmatrix} -5 \\ -3 \end{pmatrix}$	B
Co ordinates	$\begin{pmatrix} 3 \\ -1 \end{pmatrix}$	C
$\mathbf{n_1^\top}$	$\begin{pmatrix} 2 & 8 \end{pmatrix}$	AB
c	-34	
$\mathbf{n_2^\top}$	$\begin{pmatrix} 2 & -8 \end{pmatrix}$	BC
c	14	
$\mathbf{n_3^\top}$	$\begin{pmatrix} -4 & 0 \end{pmatrix}$	AC
c	-12	
Area	16	ΔABC
Angle	75.96	$\angle BAC$
Angle	28.07	$\angle ABC$
Angle	75.96	$\angle ACB$

TABLE .1
EQUATIONS OF LINES

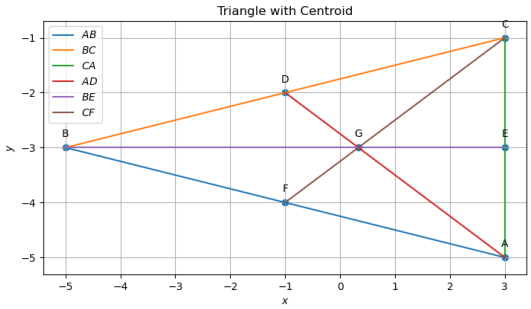

Fig. .2. Triangle with centroid generated using python

parameter	value	description
Co ordinates	$\begin{pmatrix}-1\\-2\end{pmatrix}$	**D**
Co ordinates	$\begin{pmatrix}3\\-3\end{pmatrix}$	**E**
Co ordinates	$\begin{pmatrix}-1\\-4\end{pmatrix}$	**F**
$\mathbf{n_4^\top}$	$\begin{pmatrix}3 & 4\end{pmatrix}$	AD
c	-11	
$\mathbf{n_5^\top}$	$\begin{pmatrix}0 & -8\end{pmatrix}$	BE
c	24	
$\mathbf{n_6^\top}$	$\begin{pmatrix}-3 & 4\end{pmatrix}$	CF
c	-13	
Co ordinates	$\begin{pmatrix}0.33\\-3\end{pmatrix}$	**G**

TABLE .2
EQUATIONS OF LINES

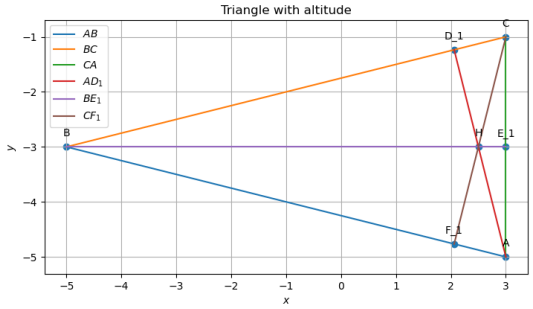

Fig. .3. Triangle with altitude generated using python

parameter	value	description
$\mathbf{n_7^\top}$	$\begin{pmatrix}8 & 2\end{pmatrix}$	AD_1
c	14	
$\mathbf{n_7^\top}$	$\begin{pmatrix}0 & -4\end{pmatrix}$	BE_1
c	12	
$\mathbf{n_7^\top}$	$\begin{pmatrix}-8 & -2\end{pmatrix}$	CF_1
c	-26	
Co ordinates	$\begin{pmatrix}2.5\\-3\end{pmatrix}$	**H**

TABLE .3
EQUATIONS OF LINES

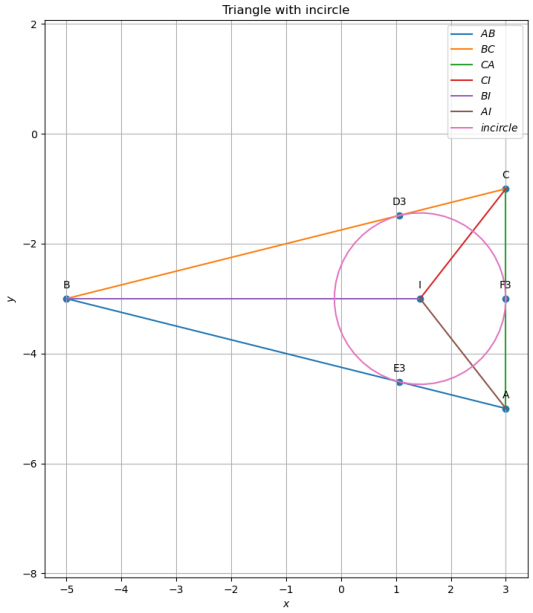

Fig. .4. Triangle with incircle generated using python

parameter	**value**	**description**
$\mathbf{n}_7^\top$	$\begin{pmatrix} 8 & -2 \end{pmatrix}$	Perpendicular bisector of AB
c	0	
$\mathbf{n}_7^\top$	$\begin{pmatrix} -8 & -2 \end{pmatrix}$	Perpendicular bisector of BC
c	12	
$\mathbf{n}_7^\top$	$\begin{pmatrix} 0 & 4 \end{pmatrix}$	Perpendicular bisector of CA
c	-12	
center(O)	$\begin{pmatrix} -0.75 \\ -3 \end{pmatrix}$	Circumcircle
radius	4.25	

TABLE .4
EQUATIONS OF LINES

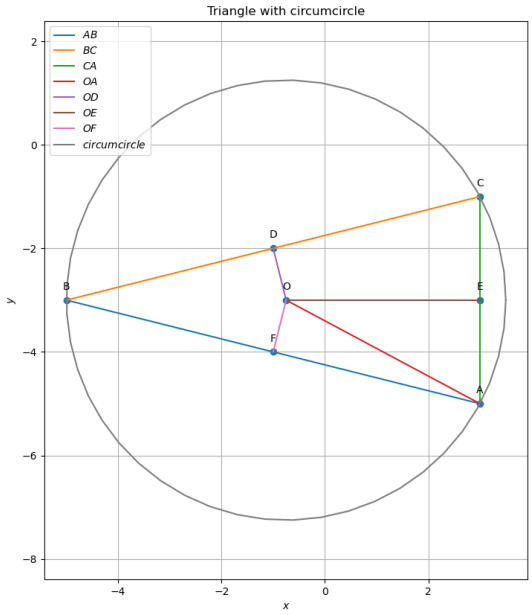

Fig. .5. Triangle with circumcircle generated using python

parameter	value	description
$\mathbf{n_7^\top}$	$\begin{pmatrix}1.24 & 0.97\end{pmatrix}$	Angular bisector of A
c	-1.12	
$\mathbf{n_7^\top}$	$\begin{pmatrix}0 & -1.94\end{pmatrix}$	Angular bisector of B
c	5.82	
$\mathbf{n_7^\top}$	$\begin{pmatrix}-1.24 & -0.97\end{pmatrix}$	Angular bisector of C
c	-8.58	
center(I)	$\begin{pmatrix}1.44\\-3\end{pmatrix}$	Incircle
radius	1.56	
Angle	37.98	$\angle BAI$
Angle	37.98	$\angle CAI$
Co ordinates	$\begin{pmatrix}1.06\\-1.48\end{pmatrix}$	D_3
Co ordinates	$\begin{pmatrix}1.06\\-4.51\end{pmatrix}$	E_3
Co ordinates	$\begin{pmatrix}3\\-3\end{pmatrix}$	F_3
Length	2	AF_3,CE_3
Length	6.246	BD_3,BE_3
Length	2	CF_3,CD_3

TABLE .5
EQUATIONS OF LINES