



MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

COORDINATE SYSTEM (2D)

Solved Examples

1. If (2, -2) and (5, 2) are the opposite ends of a square, then the length of

the side of the square is

A. 5

 $\mathsf{B.}\,\sqrt{5}$

C. $5\sqrt{2}$

D. $5/\sqrt{2}$

Answer: D

2. If A(2, 2), B(6, 3) and C(4, 11) are vertices of a triangle ABC and D, E are the midpoints of \overline{BC} and \overline{CA} respectively, then the length of \overline{DE} is

A. 4

B. $\sqrt{17}$ C. $\frac{\sqrt{17}}{2}$ D. $\frac{\sqrt{18}}{2}$

Answer: C

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3. If A, B, C are collinear points such that A = (3, 4), B = (7, 7) and AC = 10

then C =

A. (5, 2)

B. (-5, 2)

C. (-5, -2)

D. (5, -2)

Answer: C

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Exercise 1

- 1. The distance between the points (an lpha, 1) , (0, 2) is
 - A. $|\tan \alpha|$
 - B. $|\sec \alpha|$
 - C. $|\cos \alpha|$
 - D. $|\sin \alpha|$

Answer: B

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Exercise 2
1. The distance between the points $(\cos heta,\sin heta),(-\sin heta,\cos heta)$ is
A. 1
B. 2
C. $\sqrt{2}$
D. $\sqrt{6}$
Answer: C
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Exercise 3

1. If $\pi/2 < heta < \pi$ then the distance between the points $(\cot heta,3),\,(0,2)$

is

A. $\sec \theta$

B. $\csc\theta$

 $C. - \sec \theta$

 $D.-cosec\theta$

Answer: B

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1. If the distance between the points (a, 2) and (3, 4) is 8 then a=

A.
$$\sqrt{60}$$

B. $-\sqrt{60}$

C. 3

D. $3\pm\sqrt{60}$

Answer: D

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Exercise 5

1. If the distance between the points $(a\cos\theta, a\sin\theta)$ and $(a\cos\phi, a\sin\phi)$ is 2a, $\theta =$

A.
$$2n\pi\pm\pi+\phi, n\in Z$$

B.
$$n\pi+rac{\pi}{2}+\phi, n\in Z$$

C.
$$n\pi-\phi, n\in Z$$

D.
$$2n\pi + \phi, n \in Z$$

Answer: A



Exercise 6

1. A line is of length 10 unit and one end is at (2, -3). If the abscissa of the other end is 10. Then its ordinate is

A. 9 B. 3 C. -3 D. 6

Answer: B



1. The distance between two points is 5. One of them is (3, 2) and the ordinate of the second is -1 then its x coordinates are

A. 7, -1B. -7, 1C. -7, -1

D.7, 1

Answer: A

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Exercise 8

1. If the distance between the points $(a{\cos}\,48^{\,\circ},\,0)$ and $(0,\,a{\cos}\,12^{\,\circ})$ is d

then $d^2 - a^2 =$

A. $a^2 \left(\sqrt{5}-1
ight)/4$

B.
$$a^2 \left(\sqrt{5}+1
ight)/4$$

C. $a \left(\sqrt{5}-1
ight)/8$
D. $a^2 \left(\sqrt{5}+1
ight)/8$

Answer: D



Exercise 9

1. If
$$A=\left(at^2,2at
ight),B=\left(rac{a}{t^2},\ -rac{2a}{t}
ight),S(a,0)$$
 then $rac{1}{SA}+rac{1}{SB}=$

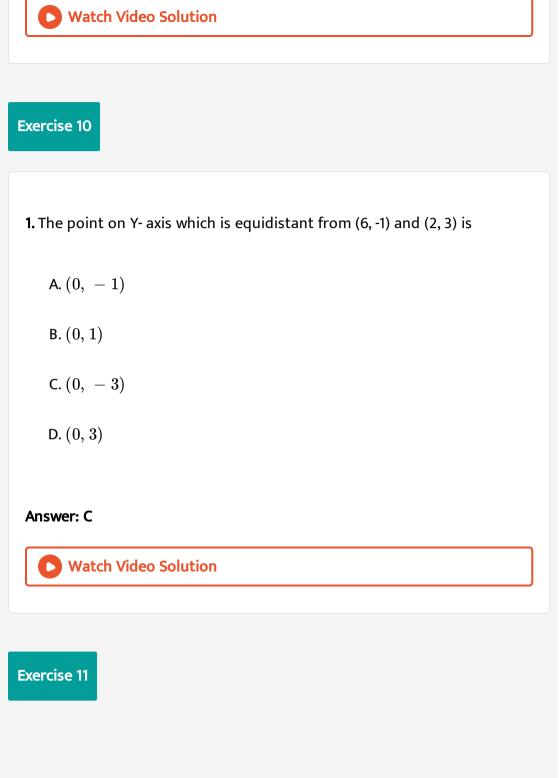
A. a

B. 1/a

 $\mathsf{C.}\,2/a$

D. 2a/3

Answer: B



1. The points (2, -2), (-1, 2),(3, 5) are the vertices of

A. equilateral triangle

B. isosceles triangle

C. right angled triangle

D. right angled isosceles triangle

Answer: D

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Exercise 12

1. The points $(2,4),\,(2,6),\,\left(2+\sqrt{3},5
ight)$ are the vertices of

A. equilateral triangle

B. isosceles triangle

C. right angled triangle

D. right angled isosceles triangle

Answer: A





1. The points (7, 9) (3, -7), (-3, 3) are the vertices of

A. equilateral triangle

B. isosceles triangle

C. right angled triangle

D. right angled isosceles triangle

Answer: D

1. The three points (2, -4), (4, -2), (7, 1)

A. are collinear

B. form an equilateral triangle

C. form a right angled triangle

D. form an isosceles triangle

Answer: A

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Exercise 15

1. If x_1, x_2, x_3 are in A.P. and y_1, y_2, y_3 are in A.P. then the points $(x_1, y_1), (x_2, y_2), (x_3, y_3)$

- A. form a right angled triangle
- B. form an equilateral triangle
- C. form an isosceles triangle
- D. are collinear

Answer: D

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Exercise 16

1. If $A(5,3), B(11, -5), P(12, \lambda)$ and $\angle APB = 90^{\circ}$, then $\lambda =$

A. 2 or 3

B. 3 or 4

C. 2 or -4

D. 3 or -2

Answer: C



Exercise 17

1. If the points $(0,0), (3,\sqrt{3}), (x,y)$ form an equilateral triangle, then (x,y) =

A.
$$\left(0, 2\sqrt{3}\right), \left(3, -\sqrt{3}\right)$$

B. $\left(1, 2\sqrt{3}\right), \left(3, \sqrt{3}\right)$
C. $\left(1, \sqrt{3}\right), \left(3, -\sqrt{3}\right)$

D. none

Answer: A

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1. If (3, 2), (-3, 2), (0, h) are the vertices of an equilateral triangle and h < 0 then the value of h is

A. $2 - \sqrt{3}$ B. $2 - 2\sqrt{3}$ C. $2 - 3\sqrt{3}$ D. $3 - 2\sqrt{3}$

Answer: C

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Exercise 19

1. If (2, 4), (2, 6) are two vertices of an equilateral triangle then the third

vertex is

A.
$$\left(2+\sqrt{3},5
ight)$$

B. $\left(\sqrt{3}-2,5
ight)$
C. $\left(5,2+\sqrt{3}
ight)$
D. $\left(5,2-\sqrt{3}
ight)$

Answer: A

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Exercise 20

1. If (2, 4), (4, 2) are extremities of the hypotenuse of a right angled isosceles triangle, then the third vertex is

A. (2, 2) or (4, 4)

B. (3, 3) or (4, 4)

C. (2, 2) or (3, 3)

D. (2, 3) or (3, 2)

Answer: A
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Exercise 21
1. If ABC is an isosceles triangle where B = (1, 3) and C = (-2, 7) then A =
A. $(5/6, 6)$
B. $(6, 5/6)$
C.(7,1/8)
D. none

Answer: A



1. If A(x, 4), B(1, -2), C(-3, 4) form an isosceles triangle with vertex at B then
x =
A. 3
B. -5
C. 3 or -5
D. 5 or -3

Answer: D

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Exercise 23

1. If O is the origin and if $A(x_1,y_1), B(x_2,y_2)$ are two points then $OA \cdot OB \cdot \cos \angle AOB =$

A. $x_1^2+y_1^2$

B. $x_1y_2 + x_2y_1$

 $\mathsf{C}.\, x_1x_2+y_1y_2$

D. $x_1y_2 - x_2y_1$

Answer: C



Exercise 24

1. If O is the origin and P = (2,3), Q = (4,5) then $OP \cdot OQ \cos \angle POQ =$

A. 8

B. 15

C. 22

D. 23

Answer: D Watch Video Solution Exercise 25 1. If O is the origin and $A(x_1, y_1), B(x_2, y_2)$ are two points then $OA \cdot OB \cdot \sin \angle AOB =$ A. $x_1^2 + y_1^2 - x_2^2 - y_2^2$ B. $x_1x_2 + y_1y_2$ $C. x_1y_2 + x_2y_1$

D. $|x_1y_2-x_2y_1|$

Answer: D

1. If A = (1, 1), B(4, 5) and C(6, 13) then cosA =

A. 64/63

B. 63/65

C.56/36

D. 36/56

Answer: B

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Exercise 27

1. If the vertices of a triangle A, B, C are A(0, 0), B(2, 1), C(9, -2) then cosB =

A.
$$\frac{16}{5\sqrt{17}}$$

B.
$$\frac{11}{\sqrt{290}}$$

C. $\frac{16}{5\sqrt{7}}$
D. $\frac{-11}{\sqrt{290}}$

Answer: D

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Exercise 28

1. The points (2, 5), (0, 3), (2, 1), (4, 3) taken in order, form

A. parallelogram

B. rectangle

C. rhombus

D. square

Answer: D

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Exercise 29
1. The points (7, 1), (4, 4), (-2,-2), (1, -5) taken in order, form
A. parallelogram
B. rectangle
C. rhombus
D. square
Answer: B Watch Video Solution
Exercise 30
1 The points $(7, 8)$ $(1, 6)$ $(-1, 0)$ $(5, 2)$ taken in order form

1. The points (7, 8), (1, 6), (-1, 0), (5, 2) taken in order, form

A. parallelogram

B. rectangle

C. rhombus

D. square

Answer: C

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Exercise 31

1. The points (-5, 12), (-2, -3), (9, -10), (6, 5) taken in order, form

A. parallelogram

B. rectangle

C. rhombus

D. square

Answer: A Watch Video Solution Exercise 32

1. find the centroid of the triangle $(-a, -b), (a, b), (a^3, ab)$

A.
$$\frac{a^3}{3}, \frac{ab}{3}$$

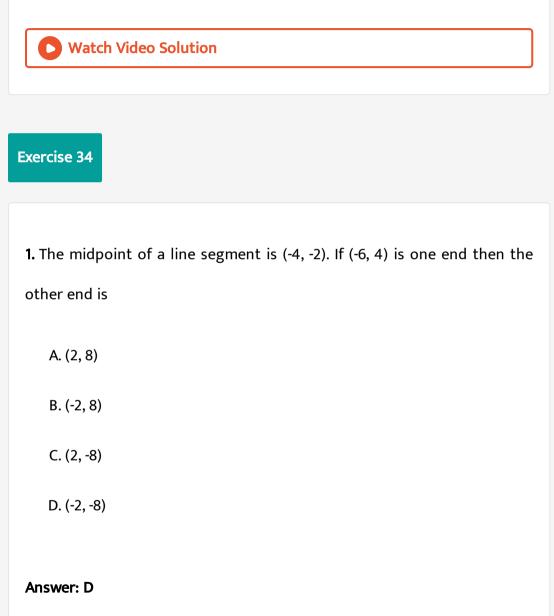
B. $\frac{a+a^2}{3}, \frac{ab}{3}$
C. 0
D. $-\frac{a^3}{3}, \frac{-ab}{3}$

Answer: A



1. If the distance of (4, 0) from (a, b) is double the distance between point

(0,0) and (a, b), then the relation between a and b is



1. If A(3, -4), B(7, 2) are the ends of a diameter of a circle and C(3, 2) is a point on the circle, then the orthocentre of the ΔABC is

A. (3, -4)

- B. (7, 2)
- C. (5, -1)
- D. (0, 0)

Answer: C

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Exercise 36

1. If the midpoint of the line joining (x, y + 1) and (x + 1, y + 2) is (3/2, 5/2) then the midpoint of the line joining

(x-1,y+1), (x+1,y-1) is

A. (-1, -1)

B. (-1, 1)

C. (1, -1)

D. (1, 1)

Answer: D

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Exercise 37

1. The points which divide internally and externally the line segment joining the points (1, 7), (6, -3) in the ratio 2:3 are

A. (3, 3) (15, 15)

B. (3, 3), (-15, -15)

C. (3, 3),(-9, 27)

D. (-3, -3), (9, 27)

Answer: C

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Exercise 38

1. The points of trisection of the line segment joining (-5, 2),(3,6) are

A. (27/5, 7/5), (15, 23)

B. (-7/3, 10/3), (1/3, 14/3)

C. (-1, 24/7), (-23/3, -4/3)

D.(3,1),(0,5)

Answer: B

Exercise 39

1. The coordinates of the point that is two thirds away from (-4, 3) to (5, 7)

is

A. (-2, 29/5)

B. (7/5, 27/5)

C.(2,17/3)

D. none

Answer: C

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Exercise 40

1. If A, B, C are collinear points such that A = (3, 4), B = (7, 7) and AC = 10 then C =

A. (5, 2)

B. (5, -2)

C. (-5, 2)

D. (-5, -2)

Answer: D

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Exercise 41

1. If (2, -3), (-2, 1) are the points of trisection of A, B then A and B are

A. (6, -7), (-6, 5)

B. (6, -7), (-6, 4)

C. (5, -7), (-6, 4)

D. (5, -7), (-6, 5)

Answer: A

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Exercise 42

1. The point which divides the line segment joining (a + b, a - b), (a - b, a + b) in the ratio a : b externally is

A.
$$\left(\frac{a^2 - 2ab - b^2}{a - b}, \frac{a^2 + b^2}{a - b}\right)$$

B. $\left(\frac{a^2 + 2ab - b^2}{a - b}, \frac{a^2 + b^2}{a - b}\right)$
C. $\left(\frac{a^2 + 2ab + b^2}{a - b}, \frac{(a + b)^2}{a - b}\right)$

D. none

Answer: A



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Exercise 43
1. The fourth vertex of the rectangle whose other vertices are (4, 1), (7, 4) (13, -2) is
A. (10, -5)
B. (10, 5)
C. (-10, 5)
D. (-10, -5)
Answer: A
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Exercise 44

1. The fourth vertex of the square whose consecutive vertices are (2, 1), (4,

3), (-2, 5) is

A. (2, -2)

B. (17, 13)

C. (-4, 3)

D. (6, 9)

Answer: C

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1. The extremities of a diagonal of a parallelogram are the points (3, -4) and (-6, 5). If the third vertex is (-2, 1) then the fourth vertex is

A. (1, 0)

B. (-1, 0)

C. (1, 1)

D. (-1, -1)

Answer: B

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Exercise 46

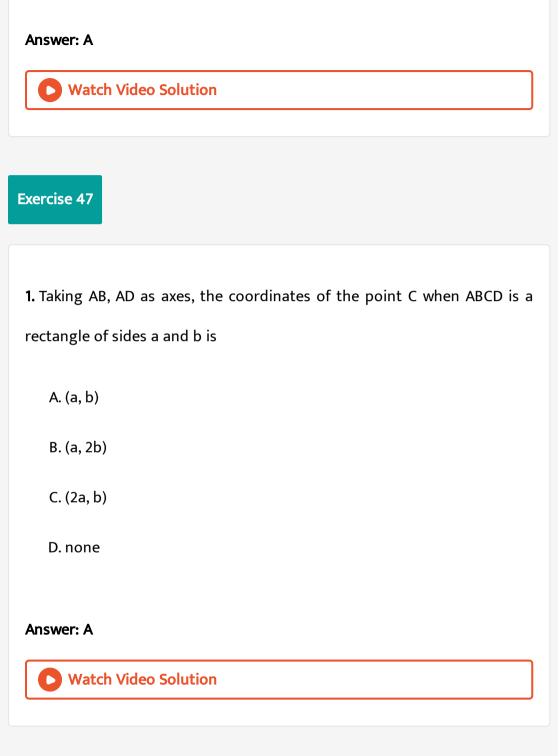
1. Taking AB, AD as axes, the coordiantes of the point C when ABCD is a square of side a is

A. (a, a)

B. (1, 2a)

C. (2a, 2a)

D. none



1. ABCD is a square of side 2a. Taking the centre of the square as origin and axes parallel to the sides AB and AD. The coordinates of the vertices of the square are

A. (a, a), (a, 0), (-a, a), (a, -a)

B. (a, a), (a, -a), (-a, -a), (-a, a)

C. (a, 0), (a, a), (-a, -a), (-a, a)

D. none

Answer: B

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Exercise 49

1. Two opposite vertices of a square are (1, -2) and (-5, 6) then the length
of the side is
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Exercise 50
1. A square has two opposite vertices at the points (2, 3) and (4, 1). The length of the side is
A. 0
B. 1
C. 3
D. 2
Answer: D

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1. If (2,1), (-2, 5) are two opposite vertices of square then the area of the square is

B. 12 C. 16 D. 36

A. 4

Answer: C

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1. ABCD is a rectangle. If A = (2, 3), C = (8, 11) and BD is parallel to y-axis

then B and D are

A. (5, 12), (5, 2)

B. (3, 9), (3, 2)

C. (7, 5), (7, 15)

D. (12, 5), (2, 5)

Answer: A

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Exercise 53

1. The centre of the circle passing through (2, 3), (5, 3), (5, -1), (2, -1) is

A. (2, -1)

B. (5, -1)

C. (2, 3)

D. (7/2, 1)

Answer: D
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Exercise 54
1. x-axis divides the line segment joining (2, -3), (5, 7) in the ratio
A. 1:2
B. 3:7
C. 4: 5
D. 3:4
Answer: B
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Exercise 55

1. y-axis divides the line segment joining (3, 5), (-4, 7) in the ratio

A. 1:2

B. 3:7

C.4:5

D. 3:4

Answer: D

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1. The ratio in which (2, 3) divides the line segment joining (4, 8), (-2, -7) is

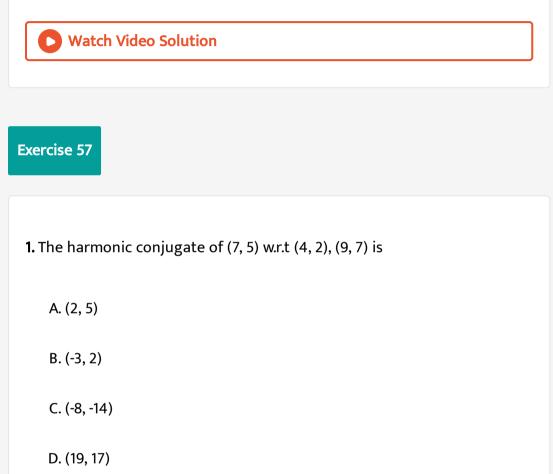
A. 2:1 externally

B. 2:3

C. 4: 3 externally



Answer: D



Answer: D

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1. If Q is the harmonic conjugate of P w.r.t. A, B and AP = 2, AQ = 6 then AB =

A. 5

- B. 1
- C. 3

D. 2

Answer: C

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1. If A and B are the points (-3, 4), (2, 1) then the coordinates of point C on

AB produced such that AC = 2BC are

A. (2, 4)

B. (3, 7)

C. (7, -2)

D. (-1/2, 5/2)

Answer: C

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Exercise 60

1. P = (-5, 4) and Q = (-2, -3). If \overline{PQ} is produced to R such that P divides \overline{QR}

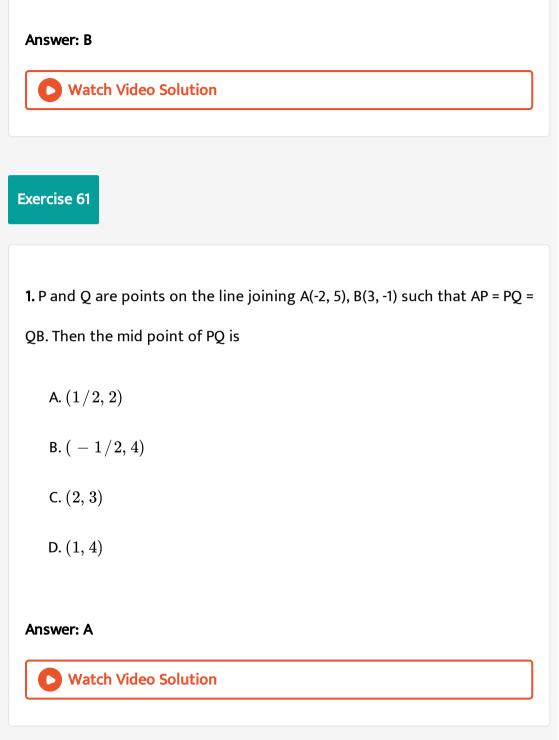
externally in the ratio 1:2, then R is

A. (1, 10)

B. (1, -10)

C. (10, 1)

D. (2, -10)



1. If P, Q are the points of trisection of A(1, -2), B(-5, 6) then PQ =

A. 10

B. 5

C.10/3

D. 5/2

Answer: C

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Exercise 63

1. If P(-1, 4), Q(11, -8) divide AB harmonically in the ratio 3:2 then A, B in order are

A. (-4, 7), (1, 2)

B. (1, 2), (-4, 7)

C. (7, -4), (2, 1)

D. (2, 1), (7, -4)

Answer: A

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Exercise 64

1. If A = (1, -1), B = (-1, 3), C = (5, 1) then the length of the median through A is

A. $3\sqrt{2}$ B. $2\sqrt{3}$

 $C.\sqrt{10}$

D. 2

Answer: C Watch Video Solution Exercise 65

1. A(a, b) and B(0, 0) are two fixed points. M_1 is the mid point of AB. M_2 is the midpoint of $\overline{AM_1}$, M_3 is the midpoint of $\overline{AM_2}$ and so on. Then M_5 is

A.
$$\left(\frac{7a}{8}, \frac{7b}{8}\right)$$

B. $\left(\frac{15a}{16}, \frac{15b}{16}\right)$
C. $\left(\frac{31b}{32}, \frac{31b}{32}\right)$
D. $\left(\frac{63a}{64}, \frac{63b}{64}\right)$

Answer: C

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1. The point whose coordinates are $x=x_1+t(x_2-x_1), y=y_1+t(y_2-y_1)$ divides the join of (x, y) and (x_2,y_2) in the ratio

A.
$$\frac{t}{1+t}$$

B.
$$\frac{1+t}{t}$$

C.
$$\frac{t}{1-t}$$

D.
$$\frac{1-t}{t}$$

Answer: C

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Exercise 67

1. If the point $(x_1+t[x_2-x_1],y_1+t[y_2-y_1])$ divides the join of (x_1,y_1) and (x_2,y_2) internally, then

A. t < 0

 ${
m B.}\,0 < t < 1$

C.t > 1

 $\mathsf{D}.\,t=1$

Answer: B

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1. Midpoints of the sides AB and AC of ΔABC are (-3, 5) and (-3, -3) respectively, then the length of BC =

В	•	1	5

C. 16

D. 30

Answer: C

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Exercise 69

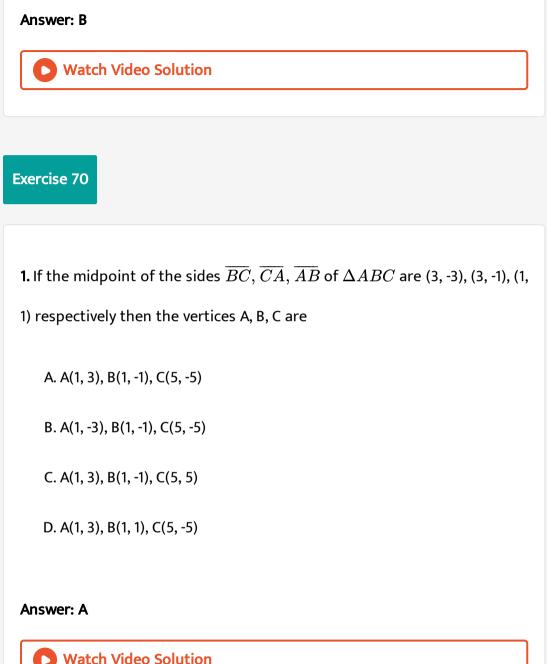
1. A = (2, 2), B = (6, 3), C(4, 1) are the vertices of a triangle. If D, E are the midpoints of BC, CA then DE =

A.
$$\sqrt{17}$$

B. $\frac{1}{2}\sqrt{17}$

 $\mathsf{C.}\,2\sqrt{17}$

D. none



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1. The points D, E, F are the midpoints of the sides \overline{BC} , \overline{CA} , \overline{AB} of ΔABC respectively. If A = (-2, 3), D = (1, -4), E = (-5, 2), then F =

A. (4, 3)

B. (4, -3)

C. (-4, 3)

D. (-4, -3)

Answer: B

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1. If A = (3, -4) and the midpoints of AB, AC are (2, -1), (4, -5) respectively

then the midpoint of BC is

A. (1, 2)

B. (3, -2)

C. (-1, 2)

D. (0, -3)

Answer: B

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Exercise 73

1. The centroid of the triangle formed by (7, 4), (4, -6), (-5, 2) is

A. (2, 3)

B. (2, -3)

C. (2, -1)

D. (2, 0)

Answer: D
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Exercise 74
1. If the centroid of the triangle whose vertices are (2, 4), (3, k) and (4, 2) is (k, 3) then k =
A. 1
B. 2
C. 3
D. 4
Answer: C
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1. The centroid of a triangle is (2, 3) and two of its vertices are (5, 6) and

(-1, 4). The third vertex of the triangle is

A. (2, 1)

B. (2, -1)

C. (1, 2)

D. (1, -2)

Answer: B

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Exercise 76

1. If G is the centroid of ΔABC , then $rac{AG^2+BG^2+CG^2}{AB^2+BC^2+CA^2}=$

A. 1

B. 3

C.1/3

D. -1

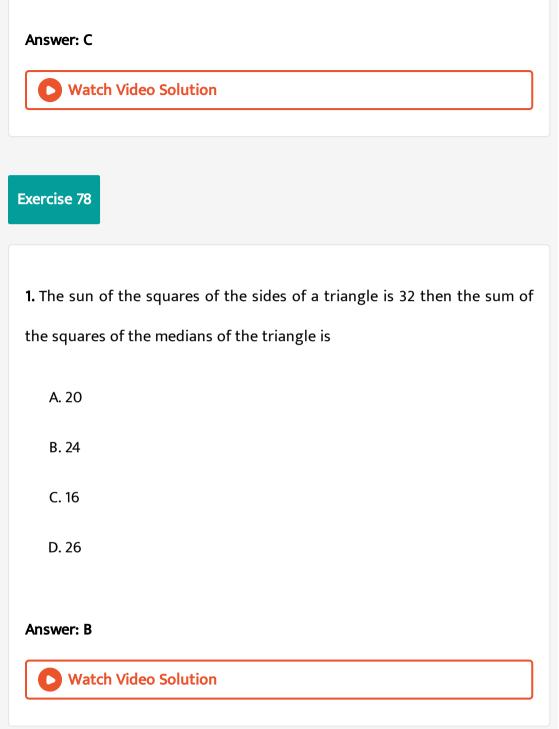
Answer: C

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Exercise 77

1. If a vertex of a triangle is (1, 1) and the midpoints of two sides through this vertex are (-1, 2) and (3, 2), then the centroid of the triangle is

$$A. \left(-1, \frac{7}{3} \right)$$
$$B. \left(\frac{-1}{3}, \frac{7}{3} \right)$$
$$C. \left(1, \frac{7}{3} \right)$$
$$D. \left(\frac{1}{3}, \frac{7}{3} \right)$$



1. If (1, 2), (4, -3), (-2, 4) are midpoints of the sides of a triangle, then its centroid is

A. (1, 0)

B. (1, 1)

C. (1, 2)

D. (2, 2)

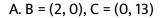
Answer: B

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1. The centroid of ΔABC is (2, 7). If the points B, C lie on x, y axes

respectively and A = (4, 8) then B and C are



- B. B = (0, 2), C = (0, 13)
- C. B = (2, 0), C = (10, 0)
- D. B = (0, 0), C = (0, 13)

Answer: A

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Exercise 81

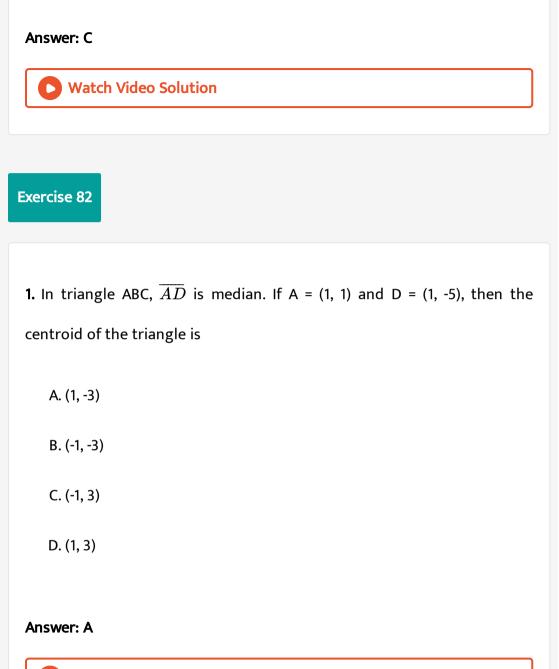
1. In ΔABC , centroid = (2, 0). If (1, 3) is the midpoint of BC, then A =

A. (7, 4)

B. (-5, 2)

C. (4, -6)

D. (-3, -2)



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1. If the centroid of the triangle formed with (a, b), (b, c) and (c, a) is O(0

, 0) then $a^3 + b^3 + c^3 = \,$

A. 0

B. abc

 $\mathsf{C}. a + b + c$

D. 3abc

Answer: D

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Exercise 84

1. A(4, 1), B(7, 4), C, D are the vertices of a rectangle. If (8, 1) is the centroid

of ΔABC , then D =

A. (13, -2)

B. (10, -5)

C. (-8, 3)

D. (2, 17)

Answer: B

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Exercise 85

1. If the lengths of two medians of a triangle are equal, then the triangle

is

A. right angled

B. equilateral

C. isosceles

D. scalane

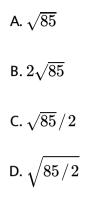
Answer: C
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Exercise 86
1. The centroid of the triangle formed by (2, -5), (2, 7), (4, 7) is
A. (2, -9)
B. (3, 1)
C. (4, -1)
D. $(8/3, 3)$

Answer: D

D Watch Video Solution



1. The circumradius of the triangle formed by (3, 7), (3, -2), (5, 7) is



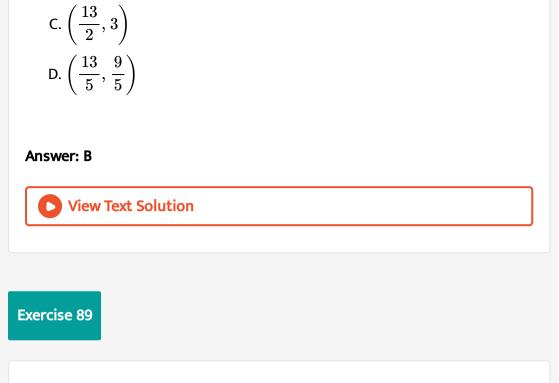
Answer: C

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Exercise 88

1. The point of intersection of the perpendicular bisectors of the sides of the triangle formed by the points (2, 1), (5, 2) and (3, 4) is

$$A.\left(\frac{13}{2},\frac{9}{2}\right)$$
$$B.\left(\frac{13}{4},\frac{9}{4}\right)$$



1. The point P is equidistant from A(1,3), B(-3,5) and C(5, -1), then PA is equal to

A. 5

B. $5\sqrt{5}$

C. 25

D. $5\sqrt{10}$

Answer: D



Exercise 90

1. The circumcentre of a triangle lies with in the triangle only when the triangle is

A. acute angled triangle

B. right angled triangle

C. obtuse angled triangle

D. none

Answer: A

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1. The vertices of a triangle are (6, 6), (0, 6) and (6, 0). The distance between its circumcentre and centroid is

A. $2\sqrt{2}$ B. 2 C. $\sqrt{2}$

D. 1

Answer: C

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1. The orthocentre of the triangle formed by (-1, -3), (-1, 4), (5, -3) is

A. (2, 7)

B. (-3, -4/3)

C. (4, 3)

D. (-1, -3)

Answer: D

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Exercise 93

1. The orthocentre of the triangle formed by (2, -1/2), (1/2, -1/2)and $\left(2, \left(\sqrt{3}-1\right)/2\right)$ is

- A. $(3/2, (9\sqrt{3}-3)/6)$
- B. (2, -1/2)
- $\mathsf{C}.\left(5 \mathop{/} 4, \left(\sqrt{3} 2 \right) \mathop{/} 4 \right)$

D.
$$(1/2, -1/2)$$

Answer: B



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Exercise 94
1. Origin is the orthocentre of ΔABC where A = (5, -1), B = (-2, 3) then the orthocentre of ΔOAC is
A. (-4, -7)
B. (3, -2)
C. (-2, 3)
D. (5, -1)
Answer: C
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1. If O is the orthocentre of the triangle formed by A(1, -3), B(7, 2), C(2, 5) then the distance between the orthocentres of ΔBOC , ΔAOB is

B.
$$2\sqrt{65}$$

C. $\frac{1}{2}\sqrt{65}$

/65

۸

D. none

Answer: A

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1. If origin is the orthocentre of a triangle formed by the points $(\cos \alpha, \sin \alpha, 0), (\cos \beta, \sin \beta, 0), (\cos \gamma, \sin \gamma, 0)$ then $\sum \cos(2\alpha - \beta - \gamma) = -$

A. 0			
B. 1			
C. 2			
D. 3			

Answer: D

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Exercise 97

1. If A(3, -4), B(7, 2) are the ends of a diameter of a circle and C(3, 2) is a

point on the circle, then the orthocentre of the ΔABC is

- A. (0, 0)
- B. (3, 4)
- C. (3, 2)
- D. (7, 2)

Answer: C	
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Exercise 98	
1. The incentre of the triangle formed by the points (0, 0), (5, 12), (16, 12) is	
A. (6, 9)	
B. (7, 9)	
C. (6, 7)	

D. (9, 7)

Answer: B



1. The excentre of the triangle formed by the points (0, 3), (4, 0), (0, 0) which is opposite to (0, 0) is

A. (3, 1)

B. (6, 6)

C. (1, -1)

D. (3/2, 5/2)

Answer: C

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Exercise 100

1. If (0, 1/2), (1/2, 1/2), (1/2, 0) are the midpoints of the sides of a triangle, then incentre of the triangle is

$$\mathsf{A}\left(\frac{1}{\sqrt{2}},\frac{1}{\sqrt{2}}\right)$$

B.
$$\left(1 + \frac{1}{\sqrt{2}}, 1 + \frac{1}{\sqrt{2}}\right)$$

C. $\left(1 - \frac{1}{\sqrt{2}}, 1 - \frac{1}{\sqrt{2}}\right)$
D. $\left(1 + \frac{1}{\sqrt{2}}, 1 - \frac{1}{\sqrt{2}}\right)$

Answer: C



Exercise 101

1. The x-coordinate of the incentre of the triangle that has the coordinates of mid points of its sides as (0, 1), (1, 1) and (1, 0) is

A. $1+\sqrt{2}$ B. $1-\sqrt{2}$ C. $2+\sqrt{2}$ D. $2-\sqrt{2}$

Answer: D			
View	Text Solution		
Exercise 102			

1. The vertices of a triangle are A(0, 0), B(1, 0) and C(0, 2). The point of intersection of bisectors of internal angles is

$$A.\left(\frac{1}{3+\sqrt{5}},\frac{1}{3+\sqrt{5}}\right)$$
$$B.\left(\frac{2}{3+\sqrt{5}},\frac{2}{3+\sqrt{5}}\right)$$
$$C.\left(\frac{1}{3+\sqrt{5}},\frac{2}{3+\sqrt{5}}\right)$$
$$D.\left(\frac{2}{3+\sqrt{5}},\frac{1}{3+\sqrt{5}}\right)$$

Answer: B

1. If I_1 , I_2 , I_3 are excentres of the triangle with vertices (0, 0), (5, 12), (16, 12) then the orthocentre of $\Delta I_1 I_2 I_3$ is

A. (7, 9)

B. (6,7)

C. (9, 7)

D. (6, 9)

Answer: A

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Exercise 104

1. If A = (2, 3), B = (-2, -5), C =(-4, 6) and if P is a point on BC such that AP

bisects the angle A, then P =

A.
$$\left(-\frac{22}{7}, \frac{9}{7}\right)$$

B. $\left(\frac{22}{7}, \frac{9}{7}\right)$
C. $\left(\frac{22}{7}, -\frac{9}{7}\right)$
D. $\left(-\frac{22}{7}, -\frac{9}{7}\right)$

Answer: A



Exercise 105

1. In $\triangle ABC$, the sides BC = 5, CA = 4, AB = 3. If A(0, 0) and the internal

bisector of angle A meets BC in D(12/7,12/7) then incentre of ΔABC

is

A. (2, 2)

B. (3, 2)

C. (2, 3)

D. (1, 1)

Answer: D

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Exercise 106

1. The perpendicular from the origin to the line joining the points $A(a \cos \alpha, a \sin \alpha)$ and $B(a \sin \beta, a \cos \beta)$ divides AB in the ratio

A. 1:2

B.2:1

C. 2:3

D.1:1

Answer: D

The foot of the perpendicular from origin on the line joining (3, -4), (-4,
 is

A. (1, 1)

- B. (-1, -1)
- C.(1/2,1/2)
- D. (-1/2, -1/2)

Answer: D

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1. The angles A, B and C are in A.P. in a ΔABC . If AB = 6, BC = 7 then AC =

A. 5	
B. 7	
C. 8	
D. none	

Answer: D

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Exercise 109

1. In a ΔABC , AB = 6, BC = 5 and CA = 4 and AP bisects the angle A. If P lies

on BC then BP =

A. 3

B. 31/10

C. 29/10

D. 9/2

Answer: A	
View Text Solution	
Exercise 110	

1. If the orthocentre and circumcentre of a triangle are (2, -3), (5, 6) then the centroid is

A. (2, 7)

- B. (-3, -4/3)
- C. (4, 3)
- D. (-1, -3)

Answer: C

1. If (0, 1) is the orthocentre and (2, 3) is the centroid of a triangle. Then its circumcentre is

A. (3, 2)

- B. (1, 0)
- C. (4, 3)
- D. (3, 4)

Answer: D

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Exercise 112

1. If the centroid and circumcentre of a triangle are (3, 3), (6, 2) then the

orthocentre is

A. (9, 5)

B. (3, -1)

C. (-3, 5)

D. (-3, 1)

Answer: C

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Exercise 113

1. Origin is the orthocentre of the triangle formed by the points (5, -1), (-2,

3) and (-4, -7) then its ninepoint centre is

A.
$$(-1/3, -5/3)$$

B. (5, 3)

C. (1, 1)

D. (-1/4, -5/4)

Answer: D
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Exercise 114
1. If (3, -2) is the orthocentre and (-1, 4) is the circumcentre of ΔABC then centroid of ΔABC is
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Exercise 115
1. The radius of nien point circle of the triangle formed by (6, 2), (4, 6),(0, 4) is

A.
$$\sqrt{7}/2$$

 $\mathsf{B.}\,\sqrt{2}$

C.
$$\sqrt{5}/\sqrt{2}$$

D. $\frac{5}{\sqrt{2}}$
Answer: C
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Exercise 116
1. The area of the triangle with vertices at (-4, -1), (1, 2), (4, -3) is
A. 12
B. 18
C. 17
D. 30
Answer: C

Exercise 117

1. The area of the triangle formed by the points (a, b + c), (b, c + a), (c, a + b) is A. abc B. 2ab C. 3abc D. 0

Answer: D



Exercise 118

1. The area of the triangle formed by (a + 3, a - 2), (a - 4, a + 5) and (a, a) is A. O

B.a

 $\mathsf{C.}\,7\,/\,2$

 $\mathsf{D.}\,a^2$

Answer: C

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Exercise 119

1. The area of the triangle formed by the points
$$(a, 1/a), (b, 1/b), (c, 1/c)$$
 is
A. $\left|\frac{(a+b)(b+c)(c+a)}{2abc}\right|$

$$B. \left| \frac{(a-b)(b-c)(c-a)}{2abc} \right|$$
$$C. \left| \frac{(a+b)(b-c)(c-a)}{2abc} \right|$$
$$D. \left| \frac{(a+b)(b-c)(c+a)}{2abc} \right|$$

Answer: B



Exercise 120

1. The area of the triangle with vertices $(a, 0), (a \cos \theta, b \sin \theta), (a \cos \theta, - b \sin \theta)$ is

A.
$$\sqrt{3} \frac{ab}{a}$$

B. $2\sqrt{3} \frac{ab}{4}$
C. $|ab(1 - \cos \theta) \sin \theta|$

D. $\sqrt{3}ab$

Answer: C



Exercise 121

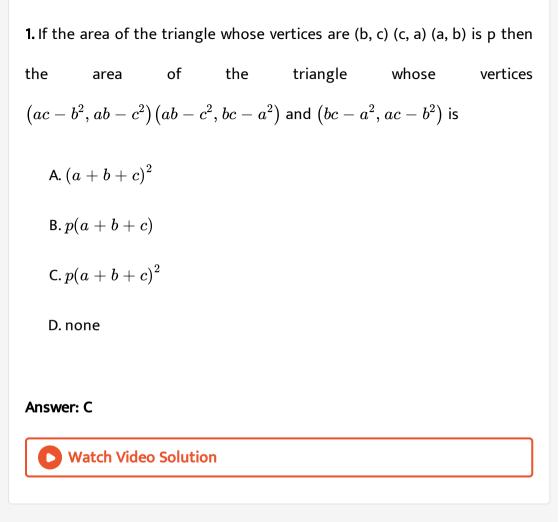
1. The area of the triangle with vertices $(a,b),\,(ar,bs),\,\left(ar^2,\,bs^2
ight)$ is

A.
$$ab(r-1)(s-1)|$$

B. $|ab(r-1)(s-1)(s-r)|$
C. $\frac{1}{2}|ab(r+1) + (s+1) + (s-r)|$
D. $\frac{1}{2}|ab(s^2(r-1) - r^2(s-1) + (s-r))|$

Answer: D





Exercise 123

1. If G is the centroid of ΔABC and if area of ΔAGB is 5 sq.unit. then

the area of ΔABC is

A. 20 sq.unit

B. 10 sq.unit

C. 15 sq.unit

D. 25 sq.unit

Answer: C

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Exercise 124

1. If the centroid of a triangle is (1, 4) and two of its vertices are (4, -3), (-9,

7), then the area of the triangle is

A. 180/3 sq.unit

B. 183/2 sq.unit

C. 174/3 sq.unit

D. 197/2 sq.unit

Answer: B		
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Exercise 125		
1. If G is the centroid of the triangle formed by A(6, 1), B(3, 5), C(-1, -1), then		
the area of ΔGAB is		
A. 19/3 sq.unit		
B. $13/2$ sq.unit		
C. 17/3 sq.unit		
D. $17/2$ sq.unit		
Answer: C		
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1. P(3, 1), Q(6, 5) and R(x, y) form a triangle where $\angle PQR = 90^\circ$ and area of $\Delta RPQ = 7$. Then the number of such points R is

A. O B. 1 C. 2 D. 3

Answer: C

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1. P, Q, R are the midpoints of AB, BC, CA of ΔABC and the area of

 ΔABC is 20. The area of ΔPQR is

A. 4		
B. 5		
C. 6		
D. 8		

Answer: B

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Exercise 128

1. If the area of the triangle formed by joining the midpoints of the sides

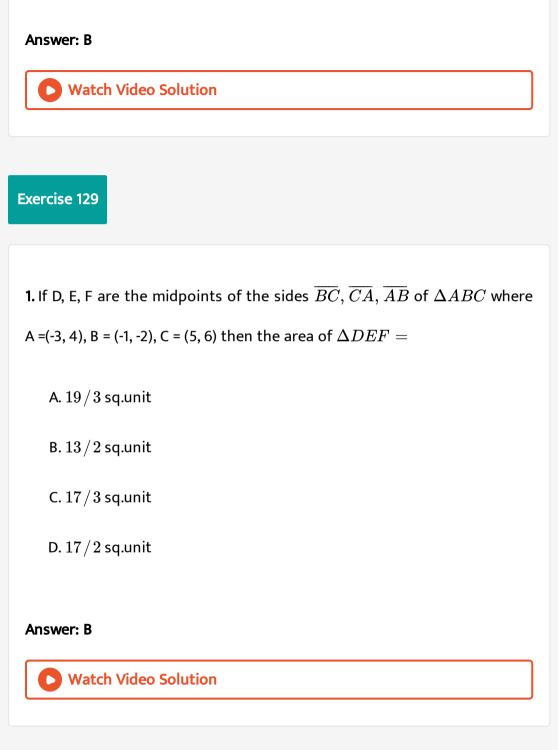
of ΔABC is 5 sq.unit, then the area of ΔABC is

A. 40 sq.unit

B. 20 sq.unit

C. 10sq.unit

D. 50 sq.unit



1. If Δ_1 is the area of the triangle formed by the centroid and two vertices of a triangle, Δ_2 is the area of the triangle formed by the midpoints of the sides of the given triangle then $\Delta_1: \Delta_2 =$

A. 3:4

B.4:1

C.4:3

D.2:1

Answer: C

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Exercise 131

1. If A(6, 3), B(3, 5), C(4, 2), P(α , β), then the ratio of the areas of the triangles PBC, ABC is

A. $|\alpha + \beta|$: 7

B. $|\alpha - \beta|$: 7

C. $|\alpha + \beta + 2|: 7$

D. |3lpha+eta-14| : 7

Answer: D

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1. If A(6, 3), B(-3, 5), C(4, -2), D(x, 3x) are four points and the magnitude of the area of ΔABC is twice the area of ΔDCB then x =

B. - 3/8

C.11/8

D. none

Answer: B

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Exercise 133

1. If A = (-3, 4), B(-1, -2), C(5, 6), D(x, -4) are the vertices of a quadrilateral such that area of $\Delta ABD = 2[$ Area of $\Delta ACD]$ then x =A. 6 B. 9 C. 69

D. 96

Answer: C	
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Exercise 134	

1. The point A divides the join of P(-5, 1) and Q(3, 5) in the ratio k : 1. The values of k for which the area of ΔABC where B(1, 5), C(7, -2) is 2 sq.units is

A. 7, 31/9 B. -7, 31/9 C. 7, -31/9 D. -7, -31/9

Answer: A

1. Let A(h, k), B(1, 1) and C(2, 1) be the vertices of a right angled triangle with AC as its hypotenuse. If the area of the triangle is 1, then the set of values which k can take is given by

A. {1, 3}

B. {0, 2}

C. {-1, 3}

D. {-3, -2}

Answer: C

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1. If $A(x_1,y_1), B(x_2,y_2)$ then the circumradius of ΔOAB is

A.
$$\frac{OA \cdot OB \cdot AB}{|x_1y_2 \quad x_2y_1|}$$

B.
$$\frac{OA \cdot OB \cdot AB}{2|x_1y_2 - x_2y_1|}$$

C.
$$\frac{OA \cdot OB \cdot AB}{4|x_1x_2 \quad x_2y_1|}$$

D. none

Answer: B

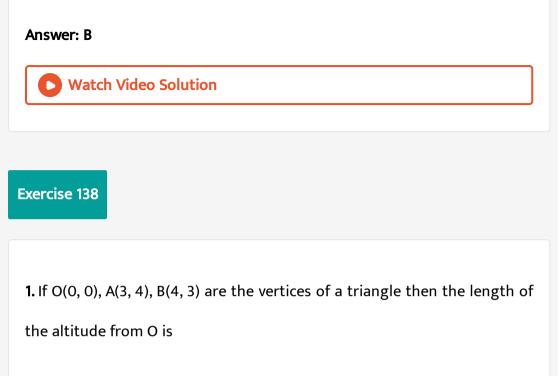


Exercise 137

1. If A = (1, 2), B (2, 3) then the circum radius of ΔOAB is

A.
$$\sqrt{130}$$

B. $\frac{1}{2}\sqrt{130}$
C. $2\sqrt{130}$
D. $\sqrt{65}$



A. $4\sqrt{2}$

B. $7\sqrt{2}$

C. $7/\sqrt{2}$

D. $7/2\sqrt{2}$

Answer: C

1. a, b, c are in A.P. and x, y, z are in G.P. The points (a, x), (b, y), (c, z) are collinear if

A. $x^2 = y$ B. $x = z^2$ C. $y^2 = z$

D. x = y = z

Answer: D

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Exercise 140

1. If (k,2-2k), $(\,-k+1,2k),$ $(\,-4-k,6-2k)$, are collinear, then k =

A. 2

B. 5

 $\mathsf{C.}\,1/2,\;-1$

D. - 1/2, 2

Answer: C

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Exercise 141

1. If the area of the triangle formed by the points (t, 2t), (-2, 6), (3, 1) is 5

sq.unit, then t is

A. 1/2, 2

B. 2, 2/3

C. - 77, 83

D. 1/2, -1

Answer: B
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Exercise 142
1. If the area of the triangle formed by the points (1, 2), (2, 3), (x, 4) is 40
sq.unit, then x is
A. $1/2, 2$
B. $2, 2/3$
C 77, 83
D. $1/2,\ -1$
Answer: C

1. The area of the triangle formed by (0, 0), $(a^{x^2}, 0)$, $(0, a^{6x})$ is $1/2a^5$ sq.unit then x =

A. 1 or 5

B.-1 or 5

C. 1 or -5

D. -1 or -5

Answer: D

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1. If the area of the triangle with vertices (2a,a) (a, a), (a, 2a) is 18 sq.units

then the circumcentre of the triangle is

Α.	(3,	3)
	·- ,	-,

B. (6, 6)

C. (9, 9)

D. (0, 0)

Answer: C

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Exercise 145

1. The area of the quadrilateral formed by the points (1, 2), (2, -3), (-2, 4), (0,

5) is

A. 10 sq.unit

B. 15 sq.unit

C. 18 sq.unit

D. 20 sq.unit

Answer: A
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Exercise 146
1. If (-1, 2), (4, 1), (7, 16) are the three vertices of a parallelogram taken in

order, then the fourth vertex and also the area of the parallelogram are

A. (-4, 3), 16 sq.unit

B. (2, 17), 78 sq.unit

C. (-8, 3), 24 sq.unit

D. (10, -5), 36 sq.unit.

Answer: B

1. I : The points (2, -2), (-1, 2), (3, 5) are the vertices of a right angled isoceles triangle.

II : The points (2, -4), (4, -2), (7, 1) form an isosceles triangle.

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II are true

Answer: A

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2. I : If O is the origin and if $A(x_1,y_1), B(x_2,y_2)$ are two points then

 $OA \cdot OB \cdot \mathrm{cos} \measuredangle AOB = x_1x_2 + y_1y_2$

II. If O is the origin and if $A(x_1,y_1), B(x_2,y_2)$ are two points then $OA \cdot OB \cdot \sin \angle AOB = x_1x_2 + y_1y_2$

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II are true

Answer: A

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3. I : The points (2, 5), (0, 3), (2, 1), (4, 3) taken in order form a square.

II : The points $(-a, -b), (0, 0), (a, b), \left(a^2, ab
ight)$ are collinear.

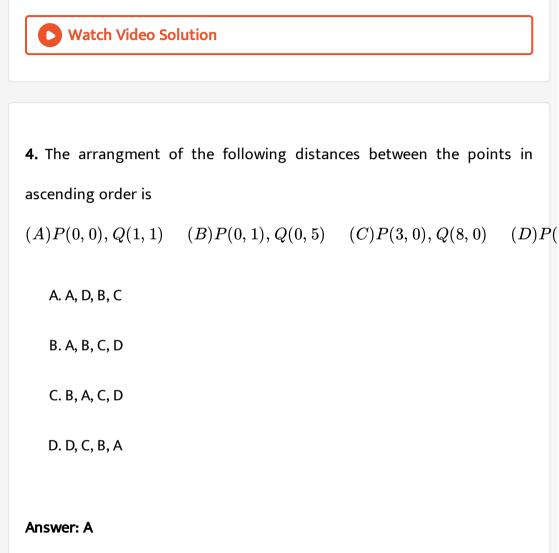
A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II are true

Answer: C



5. The arrangement of the areas of triangles formed by the following points in ascending order is (A)P(0, 0), Q(4, 0), R(0, 3) (B)P(0, 0), Q(5, 0), R(0, 2)(C)P(0, 0), Q(0, 5), R(6, 0) (D)P(3, 0), Q(0, 6), R(0, 0)

A. A, B, C, D

B. B, A, C, D

C. B, A, D, C

D. D, C, B, A

Answer: C

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6. Arrangement of the areas of the quadrilaterals formed by the following points in ascending order is (A)P(0, 0), Q(3, 5), R(1, 1), S(4, 5) (B)P(0, 0), Q(4, 0), R(0, 6), S(1, 1)(C)P(0, 0), Q(7, 6), R(5, 3), S(5, 7) A. A, C, B

B. B, A, C

C. C, A , B

D. B, C, A

Answer: A

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7. If A = (0, 0), B = (3, 0), C = (0, 4) are the vertices of a triangle then match

the following

I. Centroid	(a)(1,1)
II. Orthocentre	(b)(1,4/3)
III. Circumcentre	(c)(0,0)
IV. Incentre	(d)(4,5)
	(e)(3/2,2)

A. a, b, c, d

B. a, b, d, e

C. b, c, e, a

D. c, d, e, b

Answer: C



8. Match the following

Vertices of the triangle	${ m Nature} \ { m of} \ { m the} \ { m triangle}$
I. (0, 0), (1, 3), (-1,- 3)	(a) Right angled triangle
II. $(3,4), (3,5), (6,5)$	(b) Isosceles triangle
III. (4, 3), (-2, 3), (1, -2)	(c) Collinear

A. c, b, a

B. c, a, b

C. a, b, c

D. a, c, b

Answer: B

9. In the triangle which vertices at A(6, 3), B(-6, 3) and C(-6, -3), the median through A meets BC at P, the line AC meets the x-axis at Q, while R and S respectively denote the orthocentre and centroid of the triangle. Then the correct matching of the coordinates of points in List-I to List-II is

List-	ΙL	$\operatorname{ist-II}$		
(i)P	(A)(0,	0)	
(ii)Q	? (B)(6,	0)	
(iii)	R (C)(-	-2, 1)	
(iv)S	5 (.	D)(–	-6, 0)	
	(E)($-$	6, –	3)
	(F)(–	-6, 3)	
	(i)	(ii)	(iii)	(iv)
A.	(i) D	A	E	C
_	(i)	(ii)	(iii)	(iv)
В.	(i) D	B	E	C
C	(i)	(ii)	(iii)	(iv)
Ľ.				

с.	D	A	F	C
D.	(i)	(ii)	$egin{array}{c} (\mathrm{iii}) \ F \end{array}$	(iv)
	B	A	F	C

Answer: C

10. A : The orthocentre of the triangle having vertices as (2, 3), (2, 5), (4, 3)

is (2, 3)

R : Orthocentre of a right angled triangle is midpoint of a hypotenuse.

A. A true, R true and R is correct explanation of A

B. A true, R true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

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11. A : If the midpoints of the sides of a triangle are (1, 0), (0, 1), (1, 1) then the centroid is (2/3, 1).

R : Centroid of the triangle is same as centroid of triangle formed by their midpoints.

A. both A and R are true and R is the correct explanation of A

B. both A and R are true and R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: D

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12. A : The maximum area of the triangle formed by the points (0, 0), $(a\cos\theta, b\sin\theta), (a\cos\theta, -b\sin\theta)$ is $\frac{1}{2}|ab|$.

R : Maximum value of $\sin \theta$ is 1.

A. A is false but R is false

B. A is true but R is false

C. both A and R are true and R is the correct explanation of A

D. both A and R are true and R is not the correct explanation of A

Answer: D

