1.1: Coordinate plane, Distance and Midpoint

1. If (m, n) is the midpoint of the line joining the x-intercept and y-intercept of the graph of $y = -\sqrt{x + 1}$, then $m + n =$

   A) -1

   B) 0

   C) $-\frac{1}{2}$

   D) $-\frac{1}{4}$

   E) $\frac{1}{2}$

2. If $y < x$, then the distance between the points $(\sqrt{3}x, y)$ and $(\sqrt{3}y, x)$ is equal to

   A) $2(x - y)$

   B) $2(y - x)$

   C) $3(y - x)$

   D) $3(x - y)$

   E) $4(y - x)$

3. If $(-2,11)$ is the midpoint of the line segment joining the endpoints (a, b) and $(4, -6)$, then $a + b =$

    A) 20

    B) 16

    C) 15

    D) 18

    E) 21

4. If $x < 0$, then the distance between the points $(2x, -x)$ and $(6x, 2x)$, is

    A) $-5x$

    B) $5x$

    C) $-7x$

    D) $7x$

    E) $-6x$

5. If $M(14,11)$ is the midpoint of the line segment joining the points $A(x, 14)$ and $B(10, y)$, then the distance between the points A and B is

      A) 10

      B) 14

      C) 100

      D) 5

      E) 25

6. If the point $(x, -2), x > 0$, is 5 units from the points $(0, -5)$, then $3x - 1 =$

      A) 11

      B) 14

      C) 8

      D) 5

      E) 20

7. If $b > a$, then the distance between the points $(3a, -4b)$ and $(3b, -4a)$, is equal to

        A) $5(b - a)$

        B) $4(b + a)$

        C) $3(b - a)$

        D) $2(a - b)$

        E) $b - a$

8. The sum of the values of x such that the distance between $(x, -9)$ and $(3, -5)$ is equal to 6 is

        A) 6

        B) -6

        C) $-4\sqrt{5}$

        D) -6

        E) 6

9. If $x < 0$, then the distance between the points $(4x, 3x)$ and $(-8x, -2x)$ is equal to

A) $-13x$

B) $13x$

C) $12x$

D) $5x$

E) $-5x$

10. If the distance between the points $(-x - 2y, y - 4x)$ and $(-x, 5y - 4x)$, where $y > 0$, is $\sqrt{5}$, then $y =$

A) $\frac{1}{2}$

B) $3/2$

C) $1/5$

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

E) $\sqrt{3}/2$

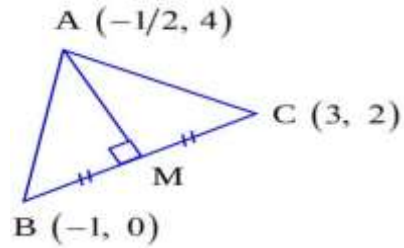11.In the adjacent figure, if $d(B, M) = d(M, C)$ then the height of the triangle (length of AM) is equal to

A) $\dfrac{3\sqrt{5}}{2}$

B) $\dfrac{3}{2}$

C) $\dfrac{2\sqrt{3}}{5}$

D) $2\sqrt{5}/3$

E) $9/2$

A $(-1/2, 4)$

C $(3, 2)$

M

B $(-1, 0)$

12.If $(-1,3)$ is the midpoint of the line segment joining the points $(a + 2, -3)$ and $(1, b + 2)$, then the length of the line segment is

A) $4\sqrt{10}$

B) $6\sqrt{2}$

C) 6

D) $5\sqrt{2}$

E) $6\sqrt{10}$

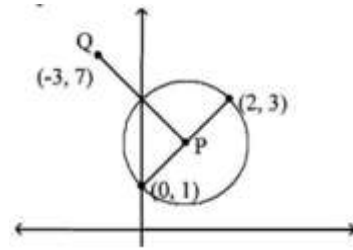13. If $(7/4, 11/4)$ is the midpoint of a line segment with endpoints (x, y) and $(-1/2, 5/3)$, then $x =$

A) 4

B) -4

C) $9/4$

D) $-9/4$

E) $-5/8$

14. If the point (a, b) is in the second quadrant, then the point $(-a, -b)$ is in the

A) fourth quadrant

15. From the adjacent graph, the distance between P and Q equals:

A) $\sqrt{41}$

16. If $(x, -2)$ is the midpoint of the line segment joining $(-6, y)$ and $(22, -16)$, then $x + y =$

A) 20

17. If the points (x, y) and $(-9,9)$ are the end points of a line segment and the point $(-7,6)$ is the midpoint, then $3x + 5y =$

A) 0

18. The x-intercept and the y-intercept of the graph of $x = \sqrt{y-1}$ are:

A) no x-intercept and y-intercept is 1.

19. If $x < 0$, then the distance between the points $(3x, -3x)$ and $(-x, -6x)$

A) $-5x$

20. If the distance between the points $(x, 2)$ and $(2, -1)$ is 5 then all possible values of x are:

A) $-2; 6$

21. If $(x, 2)$ is the midpoint of the line segment joining $(6, y)$ and $(4,6)$
then $x + y$ is equal to:

A) 3

22. If $(0, b)$ is a point on the y-axis that is equidistant (equal distance)
from the points $(3, -3)$ and $(1,1)$, then $b =$

A) -8
B) 4
C) 8
D) -2

23. Let M be the midpoint of the line segment $A(-2,1)$ and $B(-8,-3)$.

The distance between the point M and $(-2,3)$ is given by

A) 5

24. If $A(a, 0)$ is the x-intercept and $B(0, b)$ is the y-intercept of the graph

of $y = \sqrt{x + 4}$, then $a + b =$

A) -2

25. If the point $(1, y)$ is 5 units from the point $(5,2)$, then one value of y is

A) 4

B) −1

26. If $a < b$, then the distance between the points $(1, a)$ and $(1, 2b - a)$ is equal to

A) $2(b - a)$

B) $2(a - b)$

C) $4(a - b)$

D) $2(a + b)$

E) $2b$

27.Let $M(x, y)$ be the midpoint of the line segment that joins the points $(3,4)$ and $(k, 6)$. If $x + y = 1$, then the value of k is equal to

A) -11

B) -4

C) -6

D) 8

E) 5

28. If $P(a, b)$ is a point on the curve $y = x^2$ that is $\sqrt{5}$ units from the point $Q(0,3)$, then a possible value of $a + b$ is equal to

A) 6

B) -2

C) 20

D) -4

E) 16