Exercises

1. Form a straight line through the point $M(2,-5)$ parallel to the vector $\vec{a}=(4,-3)$.

2. Form a straight line through the point $M(-1,4)$ perpendicular to the vector $\vec{n}=(-2,7)$.

3. Form a straight line through the point $M(1,-3)$ parallel to the straight line $y=2x+1$.

4. Form a straight line through the point $M(3,-1)$ perpendicular to the straight line $y=4x-3$.

5. Form a straight line passing through two points $M_1(3,-1)$ and $M(-2,0)$.

6. Two straight lines are given: $y=2x+3$ and $y=-x+4$. Check if they pass through the points $A(-1,1)$, $B(2,-3)$, $C(3,1)$, $D(4,0)$, $E(2,7)$, $F(0,0)$.

7. Write down an equation of a straight line passing through the origin of coordinates and

1) parallel to the straight line $y=4x-3$;

2) perpendicular to the straight line $y=\frac{1}{2}x+1$;

3) forming 45° angle with the straight line $y=2x+5$.

8. Find the acute angle between the straight line $9x+3y-7=0$ and a straight line passing through the points $A(1,-1)$ and $B(5,7)$.

9. Form the straight line passing through the point $A(-2,5)$ and forming 45° angle with the straight line $x-3y+2=0$.

10. Form the straight line passing through the point $A(4,-7)$ parallel to the straight line MN, where $M(-4,3)$ and $N(2,-5)$.

11. The triangle ABC with the apexes $A(2,1)$, $B(-1,-1)$ and $C(3,2)$ is given.

1) Form the equations of the sides.
2) Form the equation of the altitude dropped from the apex A.
3) Form the equation of the median dropped from the apex A.

12. The midpoints of the triangle sides $P(1,2)$, $Q(5,-1)$ and $R(-4,3)$ are given. Form the equations of the sides.

13. Find the angle between the straight line $3x+y-6=0$ and the straight line passing through the points $A(-3,1)$ and $B(3,3)$.

14. The midpoints of the triangle sides $P(-2,1)$, $Q(2,3)$ and $R(4,-1)$ are given. Find the coordinates of the triangle apexes.

15. Form the straight line passing through the point $A(5,-1)$ and forming 45° angle with the axis OX.

16. Form the straight line passing through the point $A(10,-6)$ and intercepting the area of 15 sq. un. from the coordinate angle.

17. Find the distance between two parallel straight lines: $3x+2y-7=0$ and $3x+2y+15=0$.

18. Reduce the equation $12x-5y+60=0$ to:

19. a normal straight line equation;

20. the equation of the straight line with the slope;

21. the equation of the straight line with the intercepts on the axes.

22. Find the distance from the point $M(-1,-3)$ to the straight line $8x-6y+5=0$.

23. Calculate the area of a triangle forming between the coordinate axes and the straight line $5x-4y+20=0$.

24. Find the perimeter of the triangle, which is formed by two straight lines $4x-3y+6=0$ and $x+3y-36=0$ and the ordinate axis.

25. Find the apexes of the triangle if $7x+3y-25=0$ (AB), $2x-7y-15=0$ (BC) and $9x-4y+15=0$ (AC) are its sides.

26. Calculate the area of a square which is formed by the straight lines $4x-3y+15=0$ and $8x-6y+25=0$ as the sides.

27. The apex $A(2,-5)$ and the equation of a square side are given. Find the square area.