THE INDEPENDENT WORK

Task 1. Coordinates of vertices A, B, C and D of the pyramid $ABCD$ are given. Find:

1) lengths of edges DA, DB, DC as modules of vectors $\overrightarrow{DA}, \overrightarrow{DB}, \overrightarrow{DC}$;

2) the angle D between edges DA and DB as the angle between two vectors $\vec{a} = \overrightarrow{DA}$ and $\vec{b} = \overrightarrow{DB}$;

3) the cross product of $\vec{a} = \overrightarrow{DA}$ and $\vec{b} = \overrightarrow{DB}$, i.e. $\vec{c} = \vec{a} \times \vec{b} = \overrightarrow{DA} \times \overrightarrow{DB}$;

4) the mixed product of three vectors $\overrightarrow{DA}, \overrightarrow{DB}, \overrightarrow{DC}$;

Variant 1	$A(-2,1,3)$, $B(1,-2,3)$, $C(2,1,-1)$ and $D(3,3,3)$.
Variant 2	$A(2,-1,1)$, $B(5,5,4)$, $C(3,2,-1)$ and $D(4,1,3)$.
Variant 3	$A(4,1,3)$, $B(2,3,5)$, $C(6,2,3)$ and $D(3,7,2)$.
Variant 4	$A(3,0,6)$, $B(1,-3,2)$, $C(3,2,5)$ and $D(2,2,5)$.
Variant 5	$A(2,1,-4)$, $B(1,-2,3)$, $C(1,-2,-3)$ and $D(5,-2,1)$.
Variant 6	$A(4,4,3)$, $B(2,1,-1)$, $C(-2,2,1)$ and $D(1,-3,2)$.
Variant 7	$A(2,3,1)$, $B(4,1,-2)$, $C(6,3,7)$ and $D(5,4,-8)$.
Variant 8	$A(3,1,4)$, $B(-1,6,1)$, $C(-1,1,6)$ and $D(0,4,-1)$.

TASK 2. Plot a function's graph in OCTAVE:

Variant 1	$z = x^3 - \frac{7}{2}x^2 + 2x - 6$
Variant 2	$z = \frac{2}{3}x^3 - 2x^2 - 16x + 1$
Variant 3	$z = x^3 + \frac{1}{2}x^2 - 14x - 2$
Variant 4	$z = \frac{1}{3}x^3 + 5x^2 + 21x + 1$
Variant 5	$z = \frac{2}{3}x^3 + \frac{9}{2}x^2 + 4x + 2$
Variant 6	$z = \frac{1}{3}x^3 - \frac{3}{2}x^2 - 4x + 10$
Variant 7	$z = \frac{2}{3}x^3 - \frac{5}{2}x^2 - 12x + 2$
Variant 8	$z = x^3 - \frac{7}{2}x^2 - 6x + 2$