

1.

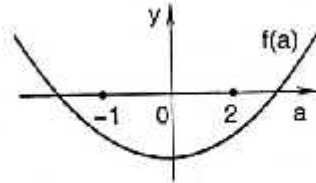
$$(2 - a) \cdot x^3 + (1 - 2a) \cdot x^2 - 6x + (5 + 4a - a^2) < 0$$

$$[-1; 2].$$

$$f(a) = a^2 + a(x^3 + 2x^2 - 4) - (2x^3 + x^2 - 6x + 5) > 0$$

$$[-1; 2].$$

$$f(a),$$



$$\begin{cases} f(-1) \leq 0, \\ f(2) \leq 0; \end{cases} \Leftrightarrow \begin{cases} -3x^3 - 3x^2 - 6x \leq 0, \\ 3x^2 + 6x - 9 \leq 0; \end{cases} \Leftrightarrow \begin{cases} x(x-1)(x+2) \geq 0, \\ (x-1)(x+3) \leq 0; \end{cases}$$

$$\Leftrightarrow x \in [-2; 0] \cup \{1\}.$$

$$x \in (-\infty; -2) \cup (0; 1) \cup (1; +\infty)$$

$$[-1; 2].$$

$$: (-\infty; -2) \cup (0; 1) \cup (1; +\infty).$$

7 -
5 -
3 -
1 -

2.

$$x^2 + 5y^2 + 34z^2 + 2x - 10x - 22y = 0.$$

$$: x^2 + 2(y - 5z) \cdot x + 5y^2 + 34z^2 - 22y = 0.$$

$$D = 4(y - 5z)^2 - 4(5y^2 + 34z^2 - 22y) = -4(2y - 3z)^2 \geq 0$$

$$\Leftrightarrow 2y = 3z.$$

$$x = 5z - y.$$

$$\begin{cases} 2y = 3z \\ x = 5z - y. \end{cases}$$

$$2y = 3z, \quad z = 2p, p \in \mathbb{R}.$$

$$2y = 3z, \quad = 3, \quad = 7.$$

$$(7; 3; 2), \quad p \in \mathbb{R}.$$

$$2x(y - 5z) + (y - 5z)^2 + (4y^2 - 12yz + 9z^2) = 0, \quad : (x^2 +$$

$$(x + y - 5z)^2 + (2y - 3z)^2 = 0 \Leftrightarrow \begin{cases} x + y - 5z = 0 \\ 2y - 3z = 0 \end{cases}$$

$$: (x; y; z) \in \{(7p; 3p; 2p)\}, \quad p \in \mathbb{R}.$$

$$\frac{7}{3}$$

3.

$D, \quad AD = R.$

$R,$

)
)

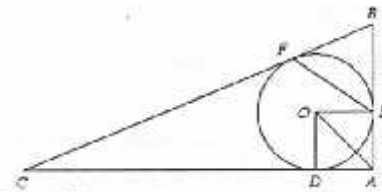
$BEF,$

$R = 2 \quad CD = 10.$

)
)

$\angle OAD = 45^\circ.$

$\angle = 90^\circ.$



$BF = x.$

$= BF = x.$

$= AD = 2, \quad CF = CD = 10 \quad BE$
 $^2 = 2^2 + 10^2, \quad (10 +)^2 = 12^2 + (2 +)^2.$

$= 3. \quad = 13, \quad \sin \angle ABC = \frac{AC}{BC} = \frac{1}{1}.$

$S_{\triangle B} = \frac{1}{2} B \cdot B \sin \angle A = \frac{1}{2} \cdot 3 \cdot 3 \cdot \frac{1}{1} = \frac{5}{1}.$

$:\frac{5}{1}.$

7

5

3

4. , 10 ,

15 , 50 , 1

: $a, a + d, a + 2d$ / (, - , d).

$$\begin{cases} \frac{5}{a} - \frac{5}{a+2d} = \frac{5}{6}, \\ \frac{10}{a} - \frac{10}{a+d} = \frac{5}{4}; \end{cases} \Leftrightarrow \begin{cases} 12d = a(a+2d), \\ 8d = a(a+d). \end{cases}$$

$$4d = a \Leftrightarrow d(a-4) = 0.$$

$d \neq 0$ (, =4. $d=4$.

: 4 / ; 8 / ; 12 / .

7 - .
3 - ,

5.

?

: , 64 .

() , (60 , 4), 4 ;

24), 6 , 58 (- ;
) 9 , (- 36),

$$4 \cdot 60 + 24 \cdot 58 + 36 \cdot 55 = 3612$$

: 3612.

7 - .
3 - ,
1 - .