

2)(x + 1).

$$: \frac{(x-3)^2(x+2)}{x^3(x-2)(x+1)} \leq 0.$$

$$: -2, -1, 0, 2, 3.$$

$$: [-2; -1) \cup (0; 2) \cup \{3\}.$$

1 3.

11.

$$2x ($$

$$2, 3x + 7x = 10x$$

10.

12.

13.

$$\frac{1+2\sin\alpha\cos\alpha}{\frac{1}{2}(\cos^2\alpha+\sin^2\alpha+2\sin\alpha\cos\alpha)} = 2.$$

$$\frac{1+\sin 2\alpha}{\sin^2(\frac{\pi}{4}+\alpha)} = \frac{1+2\sin\alpha\cos\alpha}{(\sin\frac{\pi}{4}\cos\alpha+\cos\frac{\pi}{4}\sin\alpha)^2} =$$

14.

$$0$$

$$0.$$

$$0,$$

$$-6, -4, 0, 3.$$

$$(x \geq -4) -$$

$$-6.$$

15.

$$: M = \frac{mRT}{pV}.$$

$$: pVM = mRT,$$

16.

BD).

AO, BP, CO, DO -

()

(AOB, BOC, COD, AOD),

17.

$$10.$$

$$\frac{BC}{2},$$

$$- 0, BO = OC = 5,$$

BOC -

$$5,$$

$$- 7,5.$$

18.

- MT, NT, T -

AC.

$$: AMK =$$

TNP; KMT = PNC; MBN = NTM.

19.

8.

(1), (2) () (3) ,
(4) -
(5) ,
(6) ,

20.

$(2 \cdot 1,5 = 3 \text{ м}^2)$ $(0,6 \cdot 2 = 1,2 \text{ м}^2)$ $49,8 \text{ м}^2$
 $0,4 \text{ кг}$
 $49,8 \cdot 0,4 = 19,92 \text{ кг}$

21. 1- , 2- , 3- , 4-

$1- y = \sqrt[k]{x} -$ x, k
 $2- ;$ IV, k
 $3- Oy, Ox,$
 $k > \frac{1}{2}$
 $x_B = -\frac{b}{2a}, x_B < 0, a < 0 \Rightarrow b < 0 \Rightarrow -(k-2) < 0 \Rightarrow$
 $k > 2. : k = 3; 4 -$

$y = b \Rightarrow k = 0.$

22. 1- , 2- , 3- , 4-

$1 \left(\frac{\sqrt{a}+1}{\sqrt{a}-1} - \frac{4\sqrt{a}}{a-1} \right) : \frac{\sqrt{a}-1}{a+\sqrt{a}} = \left(\frac{(\sqrt{a}+1)^2 - 4\sqrt{a}}{a-1} \right) : \frac{\sqrt{a}-1}{\sqrt{a}(\sqrt{a}+1)} = \left(\frac{(\sqrt{a}-1)^2}{(\sqrt{a}-1)(\sqrt{a}+1)} \right) \cdot \frac{\sqrt{a}(\sqrt{a}+1)}{\sqrt{a}-1} = \sqrt{a}.$
 $2 \frac{a^5 \cdot a^{-2}}{(a^3)^{-\frac{1}{2}}} = \frac{a^{\frac{5}{3}-2}}{a^{\frac{4}{3}(-\frac{1}{2})}} = \frac{a^{-\frac{1}{3}}}{a^{-\frac{2}{3}}} = a^{-\frac{3}{6}} = a^{-\frac{1}{2}} = \frac{1}{\sqrt{a}}.$
 $3 \frac{a}{a+2} - \frac{(a-2)^2}{2} \cdot \left(\frac{1}{a^2-4} + \frac{1}{a^2-4a+4} \right) = \frac{a}{a+2} - \frac{(a-2)^2}{2} \cdot \left(\frac{a-2+a+2}{(a+2)(a-2)^2} \right) = \frac{a}{a+2} - \frac{a}{a+2} = 0.$
 $4 \frac{\sin \pi a}{\cos \pi a} \left(\frac{1}{\sin^2 \pi a} - 1 \right) = \operatorname{tg} \pi a (1 + \operatorname{ctg}^2 \pi a - 1) = \operatorname{tg} \pi a \cdot \operatorname{ctg}^2 \pi a = \operatorname{ctg} \pi a = \operatorname{ctg} \frac{9\pi}{4} = 1$

23. 1- , 2- , 3- , 4-

4
 8 12 ; 8 5 6 ; 5

24. 1- , 2- , 3- , 4-

$\angle BOC = 30^\circ$ $\angle OCB = 30^\circ$
 30° ; $BO = 6 \text{ см}$
 $\angle BOC$; $\frac{BO}{BC} =$
 $\sin 60^\circ \Rightarrow BC = 4\sqrt{3} \text{ см}$; $AB = 4\sqrt{3} \text{ см}, BD = 12 \text{ см}$
 $\angle BOC$ BC
 $R = 2\sqrt{3} \text{ см}$ $BCD: \angle BDC = 30^\circ \Rightarrow BH = \frac{1}{2}BD = 6 \text{ см}$

25. 24

$x -$
 $(x-3)$ $\frac{1}{x}$ $-\frac{1}{x-3}$
 16 -7
 2 ; -2 24
 $\frac{16}{x} + \frac{7}{x-3} = 1$

26. 23

$\sqrt{8x^2-7} = 3x-4 \Leftrightarrow 8x^2-7 = 9x^2-24x+16 \Leftrightarrow x^2-$

$$24x + 23 = 0.$$

$$: 1 \quad 23.$$

27. -3

$$\Leftrightarrow \begin{cases} \frac{x^2-y^2}{xy} = -\frac{8}{3} \\ y = \frac{3x+13}{4} \end{cases} \Leftrightarrow \begin{cases} 3x^2 - 3y^2 = -8xy \\ y = \frac{3x+13}{4} \end{cases} \Leftrightarrow \begin{cases} 3x^2 - \frac{3}{16}(9x^2 + 78x + 169) = -6x^2 - 26x \\ y = \frac{3x+13}{4} \end{cases} \Leftrightarrow \begin{cases} 117x^2 + 182x - 507 = 0 \\ y = \frac{3x+13}{4} \end{cases}$$

$$: x_1 = \frac{13}{9}, x_2 = -3. \quad : y_1 = \frac{13}{3}, y_2 = 1.$$

28. 1, 5

$$\frac{4x-4}{x} + \frac{x^2+4}{x^2+x} = \frac{6+x}{x+1} \quad \frac{4x-4}{x} + \frac{x^2+4}{x(x+1)} = \frac{6+x}{x+1} \quad \frac{4x^2-4+x^2+4}{x(x+1)} = \frac{6x+x^2}{x(x+1)} \quad (x \neq 0; -1),$$

$$0; 1, 5.$$

29. 54

$$A_1B_1 - \quad , \quad A_1B_1 = \frac{1}{2}AB = 5.$$

$$: MB_1 = \frac{1}{2}MB = 4. \quad MA_1B_1, \quad : MA_1^2 + MB_1^2 = ABA_1B_1$$

$$: S = \frac{1}{2}d_1d_2\sin\varphi.$$

$$, \quad BB_1 = 12; AA_1 = 9. \quad : S = \frac{1}{2} \cdot 12 \cdot 9 = 54.$$

30. 10

$$AM \quad BC, M - \quad BC. \quad ABH \quad BAM - \quad , \quad BM = AH = 5.$$

$$M - \quad BC, \quad BC = 2BM = 10.$$

31. 2

$$|\sqrt{a+2} - a| = \sqrt{a+2} - a: \quad , \quad \sqrt{a+2} - a \geq 0$$

$$\sqrt{a+2} \geq a. \quad (\quad)$$

$$\begin{cases} a \geq 0 \\ a+2 \geq a^2 \end{cases} \quad .1 \quad , \quad : a \in (-\infty; 2].$$

$$\begin{cases} a < 0 \\ a - 6y = - \end{cases}$$

$$a \in [-2; 2].$$

32. 1

$$: x^2 - 2x + 3 = (x-1)^2 + 2 \quad 2.$$

$$2. \quad , \quad 2.$$

$$2 \quad , \quad x = 1.$$