1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

1. Rasmda keltirilgan ma'lumot asosida bitta yashil sharni nechta kub bilan almashtirish mumkinligini toping?

- ○ 1
- ○ 3
- ○ 4
- ○ 2

shar – a
silindr – b
kub – c

(1)

$3a = 4b$

$a + 2b + c = 6c$

$$\begin{cases} a + 2b = 5c \mid \cdot 2 \\ 3a - 4b = 0 \end{cases}$$

$$+\begin{cases} 2a + 4b = 10c \\ 3a - 4b = 0 \end{cases}$$

$5a = 10c$

$a = 2c.$

shar = 2 (kub)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

2. Hisoblang . $\cos 48° + \sin 18° - \cos 12° = ?$

- ○ 1
- ○ 0.1
- ○ 0
- ○ 0.5

$$\cos 48^\circ + \sin 18^\circ - \cos 12^\circ =$$

$$= \cos 48^\circ - \cos 12^\circ + \sin 18^\circ =$$

$$= -2 \cdot \sin \frac{48+12}{2} \cdot \sin \frac{48-12}{2} +$$

(2)

$$+ \sin 18^\circ =$$

$$= -2 \cdot \sin 30^\circ \cdot \sin 18^\circ + \sin 18^\circ =$$

$$= -2 \cdot \frac{1}{2} \cdot \sin 18^\circ + \sin 18^\circ =$$

$$= -\sin 18^\circ + \sin 18^\circ = 0$$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

3. Hisoblang: $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{3}+\sqrt{5}+\sqrt{6}+\sqrt{10}}$

- ○ $1-\sqrt{2}$
- ○ $\sqrt{2}+\sqrt{3}$
- ○ $\sqrt{2}+1$
- ○ $\sqrt{2}-1$

③ $\dfrac{\sqrt{5}+\sqrt{3}}{\sqrt{3}+\sqrt{5}+\sqrt{6}+\sqrt{10}} = \dfrac{\sqrt{5}+\sqrt{3}}{(\sqrt{3}+\sqrt{5})+\sqrt{2}(\sqrt{3}+\sqrt{5})} =$

$= \dfrac{(\sqrt{5}+\sqrt{3})}{(\sqrt{3}+\sqrt{5})(\sqrt{2}+1)} = \dfrac{1}{\sqrt{2}+1} =$

$= \dfrac{\sqrt{2}-1}{(\sqrt{2}+1)(\sqrt{2}-1)} = \sqrt{2}-1$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

5. Hisoblang. $\left(\frac{21}{113}-\frac{14}{19}+\frac{7}{8}-\frac{28}{41}\right)+\left(\frac{4}{41}-\frac{1}{8}+\frac{2}{19}-\frac{3}{113}\right):\frac{1}{7}$

- ○ -1
- ◉ 0
- ○ 1
- ○ 2

⑤ $\left(\frac{21}{113} - \frac{14}{19} + \frac{7}{8} - \frac{28}{41}\right) + \left(\frac{4}{41} - \frac{1}{8} + \frac{2}{19} - \frac{3}{113}\right) \cdot \frac{1}{7}$

$= \left(\frac{21}{113} - \frac{14}{19} + \frac{8}{8} - \frac{28}{41}\right) + \left(\frac{28}{41} - \frac{7}{8} + \frac{14}{19} - \frac{21}{113}\right) =$

$= 0$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

6. $EKUB(a;b)=3$ va $EKUK(a;b)=60$ bo'lsa, $a+b$ yig'indining eng katta qiymatini toping.

- 54
- 72
- 60
- 63

⑥ $ЕКИВ(a,b)=3$ $ЕКИК(a,b)=60$

$a=3$ $b=60$

$a+b=3+60=63$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

7. Agar $x^4 - 5x^2 - 5 = 0$ bo'lsa, $\frac{1}{x^2} + \frac{1}{x^4}$ ni qiymatini toping.

- (●) $\frac{1}{5}$
- ( ) 1
- ( ) $\frac{1}{25}$
- ( ) 5

(7) $x^4 - 5x^2 - 5 = 0$

$x^4 - 5(x^2 + 1) = 0$

$5(x^2 + 1) = x^4$

$\frac{x^2 + 1}{x^4} = \frac{1}{5}$

$\frac{1}{x^2} + \frac{1}{x^4} = \frac{1}{5}$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

8. Agar $\log_{12} 27 = a$ bo'lsa, $\log_6 16$ ni a orqali ifodalang.

- ○ $\frac{3-a}{3+a}$
- ◉ $\frac{12-4a}{a+3}$
- ○ $\frac{4-4a}{a-3}$
- ○ $\frac{3-4a}{a+3}$

(8) $\log_{12} 27 = a$

$$\log_{12} 27 = \frac{\log_3 27}{\log_3 12} = \frac{3}{\log_3 4 + \log_3 3} =$$

$$= \frac{3}{2\log_3 2 + 1} = a$$

$$2\log_3 2 + 1 = \frac{3}{a}$$

$$2\log_3 2 = \frac{3}{a} - 1 = \frac{3-a}{a}$$

$$\log_3 2 = \frac{3-a}{2a} \qquad \log_2 3 = \frac{2a}{3-a}$$

$$\log_6 16 = \frac{\log_2 16}{\log_2 6} = \frac{4}{\log_2 2 + \log_2 3} =$$

$$= \frac{4}{1 + \log_2 3} = \frac{4}{1 + \frac{2a}{3-a}} =$$

$$= \frac{4}{\frac{3-a+2a}{3-a}} = \frac{4(3-a)}{3+a} = \frac{12-4a}{3+a}$$

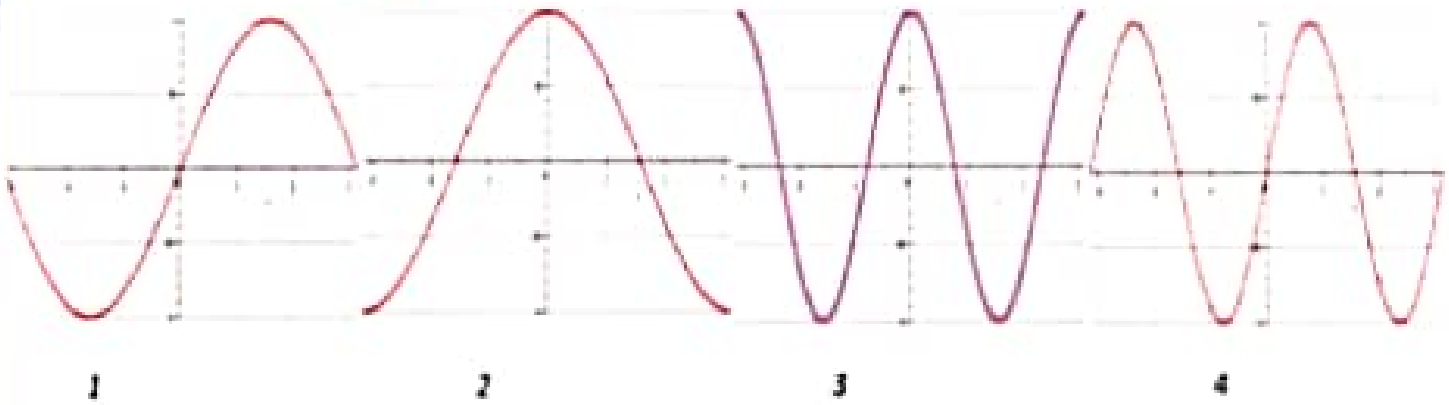
Soat 01

Minut 28

Sekund 38

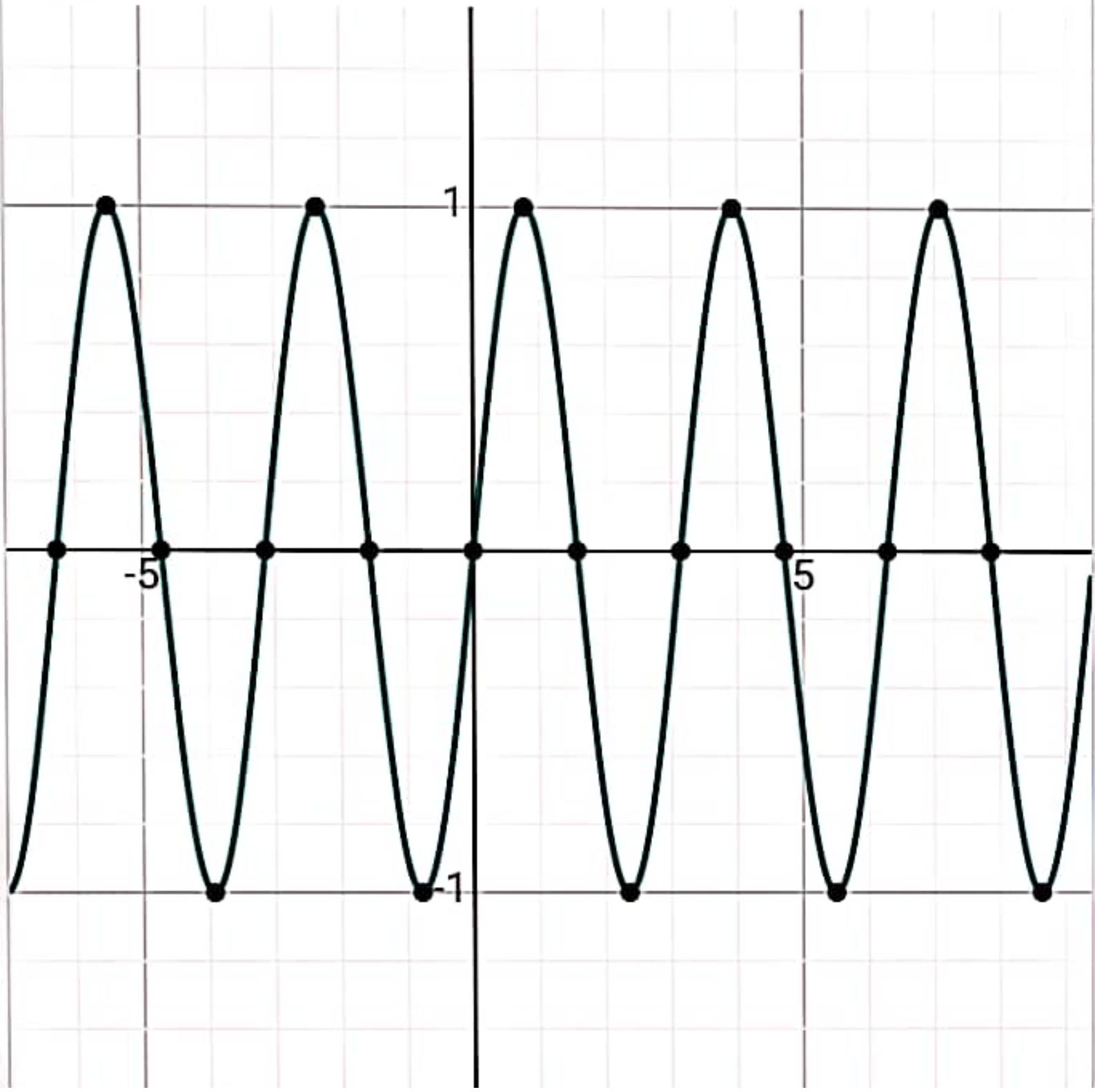
TESTNI YAKUNLASH

9. Qaysi rasmda $y = \sin 2x$ grafigi $[-\pi; \pi]$ da to'gri tasvirlangan.



- 2
- 1
- 4
- 3

Plotting: $y = \sin(2x)$



11. Hisoblang: $0.(7) + 0.0(7) + 0.00(7) + \ldots$

- ○ $\frac{71}{91}$
- ◉ $\frac{70}{81}$
- ○ $\frac{7}{18}$
- ○ $\frac{77}{810}$

(11) $0,(7) + 0,0(7) + 0,00(7) + \ldots =$

$= \frac{7}{9} + \frac{7}{90} + \frac{7}{900} + \ldots =$

$= \frac{7}{9}\left(1 + \frac{1}{10} + \frac{1}{100} + \ldots\right) =$

$= \frac{7}{9} \cdot \frac{1}{1 - \frac{1}{10}} = \frac{7}{9} \cdot \frac{10}{9} = \frac{70}{81}$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

12. Agar $\begin{cases} 2x \cdot (x+y-z) = 1 \\ 3y \cdot (x+y-z) = 2 \\ 4z \cdot (x+y-z) = 3 \end{cases}$ bo'lsa, $(x+y)^2 - z^2$ ning qiymatini toping.

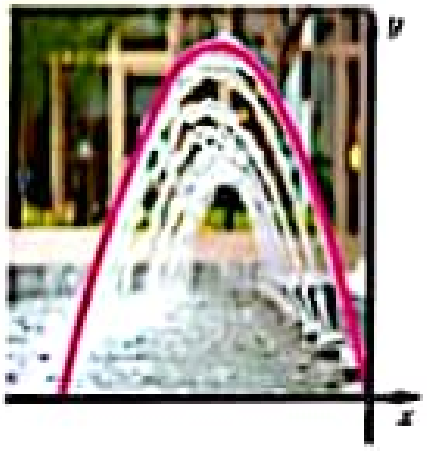
- ○ $\frac{1}{6}$
- ○ $\frac{11}{12}$
- ◉ $\frac{1}{2}$
- ○ $\frac{23}{12}$

(12) $\begin{cases} 2x\cdot(x+y-z)=1 \\ 3y\cdot(x+y-z)=2 \\ 4z\cdot(x+y-z)=3 \end{cases}$ $+\begin{cases} x\cdot(x+y-z)=\frac{1}{2} \\ y\cdot(x+y-z)=\frac{2}{3} \\ z\cdot(x+y-z)=\frac{3}{4} \end{cases}$

$(x+y-z)(x+y+z)=\frac{1}{2}+\frac{2}{3}+\frac{3}{4}=$

$=\frac{6+8+9}{12}=\frac{23}{12}$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	



13. Rasmda tasvirlangan favvora ko'rinishi $y = -x(x+6)$ *ko'rinishida bo'lsa*, favvora eng ko'pi bilan qaysi balandlikga ko'tarila oladi. (Koordinata Oy o'qi, suv yuzasida joylashgan)

- 8
- *Hisoblab bo'lmaydi*
- 6
- 9

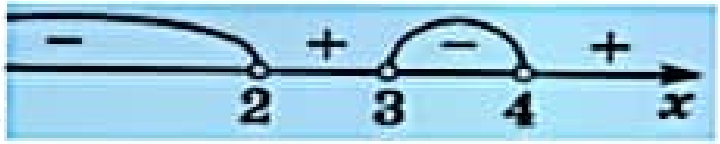
(13) $y = -x(x+6) = -x^2 + 6x$

$y'(x) = -2x - 6 = 0$

$-2x = 6 \qquad x = -3$

$y(-3) = -(-3)(-3+6) = 3 \cdot 3 = 9$

14. Qaysi javobda $\frac{(x-3)(x+1)(x-4)}{(x+1)(x-2)} > 0$ tengsizlik ishorasi to'gri ko'rsatilgan :

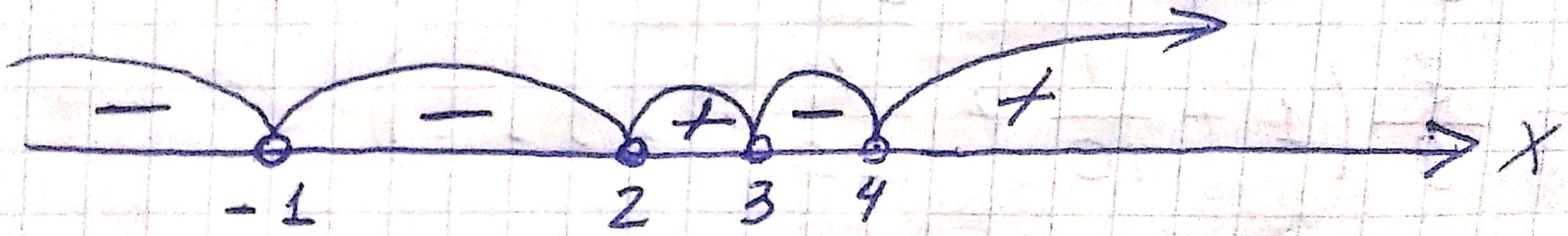
○ 

○ 

○ 

◉ 

(14) $\dfrac{(x-3)(x+1)(x-4)}{(x+1)(x-2)} > 0$



$(2;3) \cup (4;\infty)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

15. Hisoblang . $\sin 50° + \sin 10° - \cos 20° = ?$

- (●) 0
- ( ) 0.5
- ( ) 0.1
- ( ) 1

(15) $\sin 50^\circ + \sin 10^\circ - \cos 20^\circ =$

$2 \sin \frac{50^\circ + 10^\circ}{2} \cos \frac{50^\circ - 10^\circ}{2} - \cos 20^\circ =$

$= 2 \cdot \cos 20^\circ \cdot \sin 30^\circ - \cos 20^\circ =$

$= 2 \cdot \frac{1}{2} \cdot \cos 20^\circ - \cos 20^\circ =$

$= \cos 20^\circ - \cos 20^\circ = 0$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

19. Hisoblang: $\frac{1}{\log_2 30} + \frac{1}{\log_3 30} + \frac{1}{\log_5 30}$

- ○ 3
- ○ 2
- ◉ 1
- ○ 0

(19) $\frac{1}{\log_2 30} + \frac{1}{\log_3 30} + \frac{1}{\log_5 30} =$

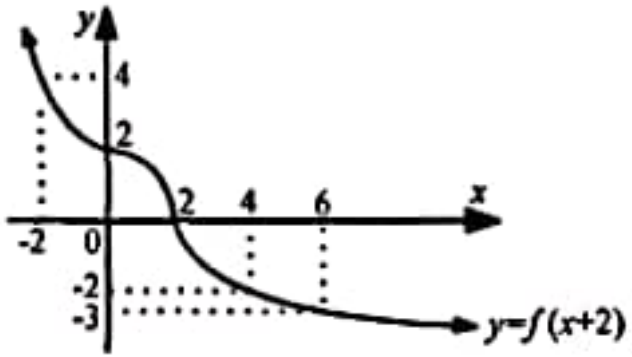
$$\log_a b = \frac{1}{\log_b a}$$

$\log_{30} 2 + \log_{30} 3 + \log_{30} 5 =$

$= \log_{30}(2 \cdot 3 \cdot 5) = \log_{30} 30 = 1$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

20. Quyida y=f(x+2) funksiya grafigi tasvirlangan. Barilgan malumotlardan foydalanib $\frac{f(0)+f(2)}{f(4)+f(6)}$ ning qiymatini toping.



- ○ 1
- ○ 2
- ◉ -3
- ○ 3

(20) $y = f(x-2)$

$f(0) \Rightarrow (x-2) = 4$ $\quad$ $f(4) \Rightarrow (x-2) = 0$

$f(2) \Rightarrow (x-0) = 2$ $\quad$ $f(6) \Rightarrow (x-4) = -2$

$$\frac{f(0)+f(2)}{f(4)+f(6)} = \frac{4+2}{0-2} = \frac{6}{-2} = -3.$$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

21. Agar $x = 2t + 5, y = 3t - 1$ va f(x)=y(x) bog'lanish mavjud bo'lsa, f(5) ning qiymatini toping.

- ○ -2
- ◉ -1
- ○ 1
- ○ 2

(21) $x = 2t + 5 \qquad y = 3t - 1$

$$t = \frac{x-5}{2} \qquad y = \frac{3}{2}(x-5) - 1 = \frac{3}{2}x - \frac{17}{2}$$

$$y(5) = \frac{3}{2}(5-5) - 1 = 0 - 1 = -1$$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

22. $P(x)$ ko‘phad berilgan: $P(x) = 3 \cdot x^{n-4} - 5 \cdot x^{\frac{n-4}{n}} - x^2 + 1$.

n=4 da $P(x)$-ko‘phadning ozod hadi 3 ga teng bo‘la oladimi?

- ○ yo‘q
- ◉ ha

(22) $P(x) = 3 \cdot x^{n-4} - 5 \cdot x^{\frac{24}{n}} - x^2 + 1$

$n = 4$

$P(x) = 3 \cdot x^{4-4} - 5 \cdot x^{\frac{24}{4}} - x^2 + 1 =$

$= 3 \cdot x^0 - 5x^6 - x^2 + 1 =$

$= -5x^6 - x^2 + 4.$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

23. x noma'lum son $(x \neq 3)$ uchun $x^2 - \frac{15}{x} = 4$ tenglik o'rinli.

$x \cdot (x+1) \cdot (x+2) \cdot (x+3)$ ko'paytmaning qiymati 15 ga teng bo'la oladimi?

- ha
- yo'q

(23) $x^2 - \frac{15}{x} = 4 \quad (x \neq 3)$

$$\frac{x^3 - 15}{x} = \frac{x^3 - 3x^2 + 3x^2 - 9x + 9x - 27 + 12}{x} = 4$$

$$x^2(x-3) + 3x(x-3) + 9(x-3) = 4(x-3)$$

$$(x-3) \neq 0$$

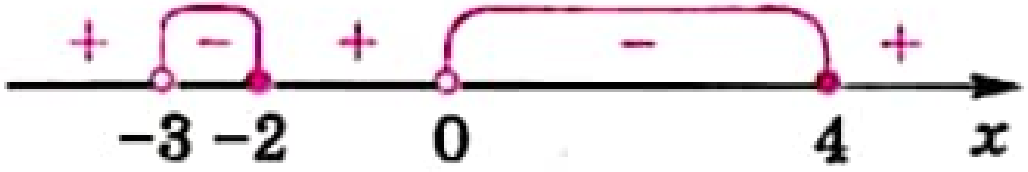
$$x^2 + 3x + 5 = 0 \qquad x^2 + 3x = -5$$

$$(x^2 + 3x)(x^2 + 3x + 2) =$$

$$= -5 \cdot (-5 + 2) = -5 \cdot (-3) = 15$$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

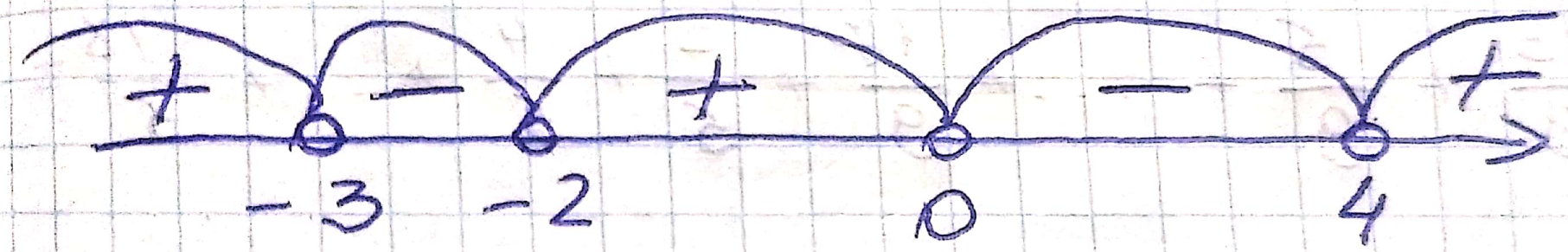
24. Berilgan $\frac{(x+2)(x-4)}{x(x+3)} < 0$ tengsizlik uchun



quyidagi oraliqlar to‘g‘ri ifodalanganmi?

- ○ *ha*
- ◉ *yo'q*

(24) $\frac{(x+2)(x-4)}{x(x+3)} < 0$



$(-3;-2) \cup (0;4)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

25. Ushbu $tg3\alpha = \frac{tg\alpha(3-tg^2\alpha)}{1-3tg^2\alpha}$ tenglik $\alpha = \frac{\pi}{6} + \frac{\pi n}{3}$ da ham to‘g‘rimi?

- ha
- yo‘q

(25) $tg3\alpha = \dfrac{tg\alpha(3-tg^2\alpha)}{1-3tg^2\alpha}$

$\alpha = \dfrac{\pi}{6} + \dfrac{\pi n}{3}$

$1 - 3tg^2\dfrac{\pi}{6} = 1 - 3\cdot\left(\dfrac{1}{\sqrt{3}}\right)^2 = 1 - 3\cdot\dfrac{1}{3} = 0$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	

26. Agar $f(x) = x^2 - 2020x + 2021$ bo'lsa, quyidagilardan qaysi biri eng kichik?

- ○ $f(1009)$
- ◉ $f(2019)$
- ○ $f(1006)$
- ○ $f(1012)$

(26) $f(x) = x^2 - 2020x + 2021 =$

$= x^2 - 2020x + 2019 + 2 =$

$= (x-1)(x-2019) + 2$

$f(2019) = (2019-1)(2019-2019) + 2$

$= 0 + 2 = 2.$

27. Hisoblang:

$$\frac{1}{9}+\frac{2}{5}+\frac{3}{9}+\frac{4}{5}+\frac{5}{9}+\frac{6}{5}+\ldots\frac{17}{9}+\frac{18}{5}$$

- (●) 27
- ( ) 24
- ( ) 22
- ( ) 25

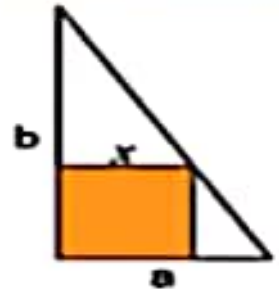
(27) $\frac{1}{9} + \frac{2}{5} + \frac{3}{9} + \frac{4}{5} + \frac{5}{9} + \frac{6}{5} + \ldots + \frac{17}{9} + \frac{18}{5} =$

$= \frac{1}{9} + \frac{3}{9} + \frac{5}{9} + \ldots + \frac{17}{9} + \frac{2}{5} + \frac{4}{5} + \ldots + \frac{18}{5} =$

$= \frac{1}{9}(1 + 3 + 5 + \ldots + 17) + \frac{2}{5}(1 + 2 + \ldots + 9) =$

$= \frac{1}{9} \cdot \frac{1+17}{2} \cdot 9 + \frac{2}{5} \cdot \frac{1+9}{2} \cdot 9 =$

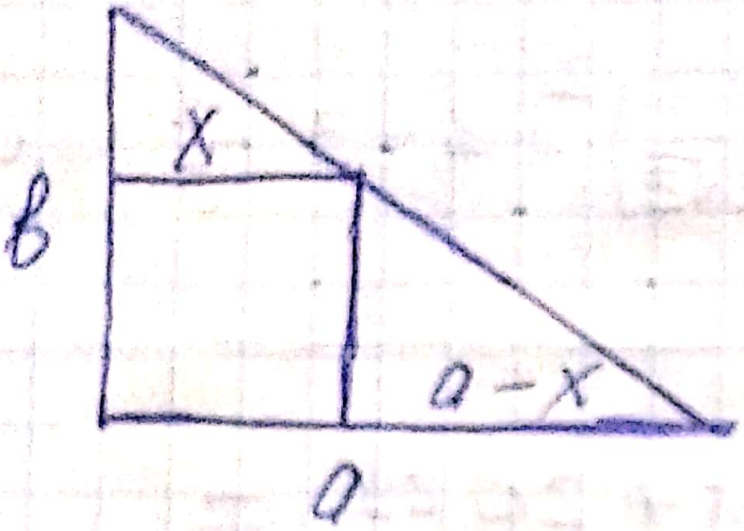
$= 9 + 18 = 27$

28. 

To‘g‘ri burchakli uchburchakka kvadrat ichki chizilgan (rasmga qarang). Kvadrat tomonini to‘g‘ri to‘rtburchak katetlari orqali ifodalang.

- ○ $\frac{a-b}{2ab}$
- ○ $\frac{ab}{a-b}$
- ◉ $\frac{ab}{a+b}$
- ○ $\frac{a+b}{ab}$

28



$$\frac{b}{x} = \frac{a}{a-x}$$

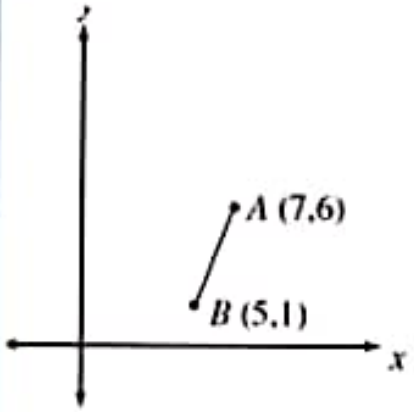
$$ab - bx = ax$$

$$ax + bx = ab$$

$$x(a+b) = ab$$

$$x = \frac{ab}{a+b}$$

29. ***AB* masofani toping ?**

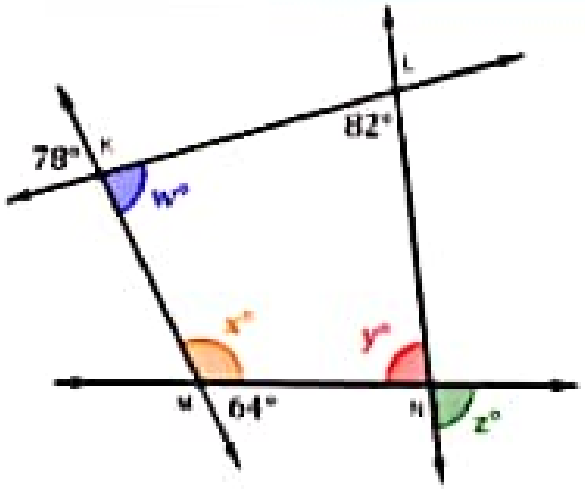


- ○ $\sqrt{27}$
- ◉ $\sqrt{29}$
- ○ $\sqrt{30}$
- ○ $\sqrt{24}$

(29) $A(7,6)$ $B(5;1)$

$$\overrightarrow{AB} = \sqrt{(7-5)^2 + (6-1)^2} = \sqrt{4+25} = \sqrt{29}$$

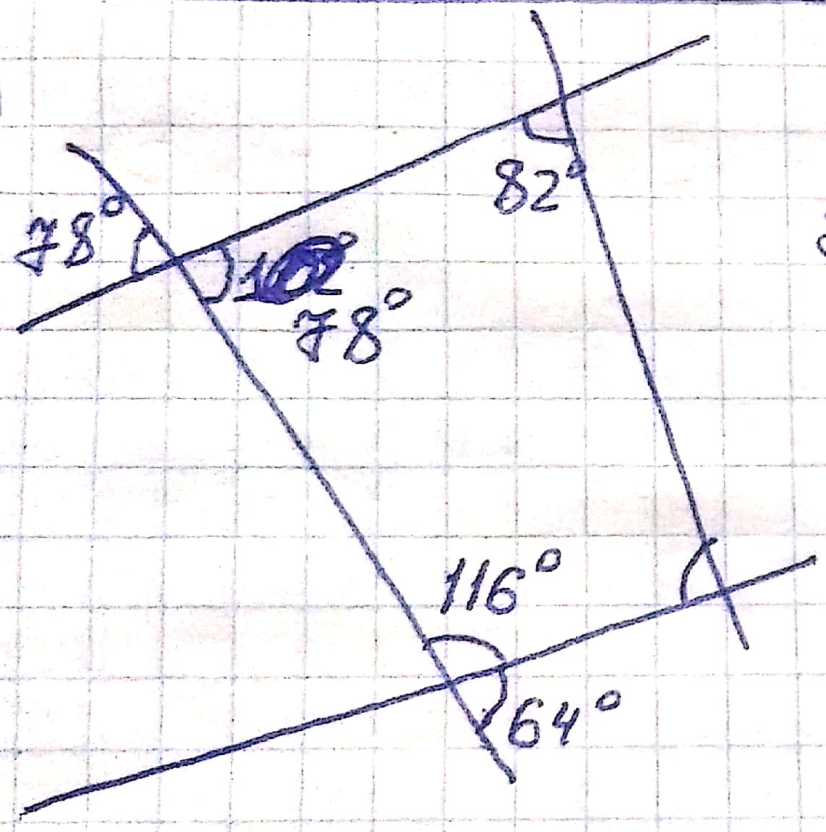
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
39	40																	



33. Berilgan chizmadan z° ning gradus o'lchamini toping.

- (●) 84
- ( ) 76
- ( ) 86
- ( ) 72

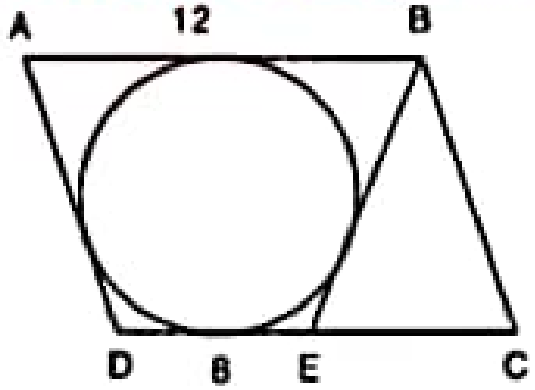
(31)



$78° + 82° + 116° = 276°$

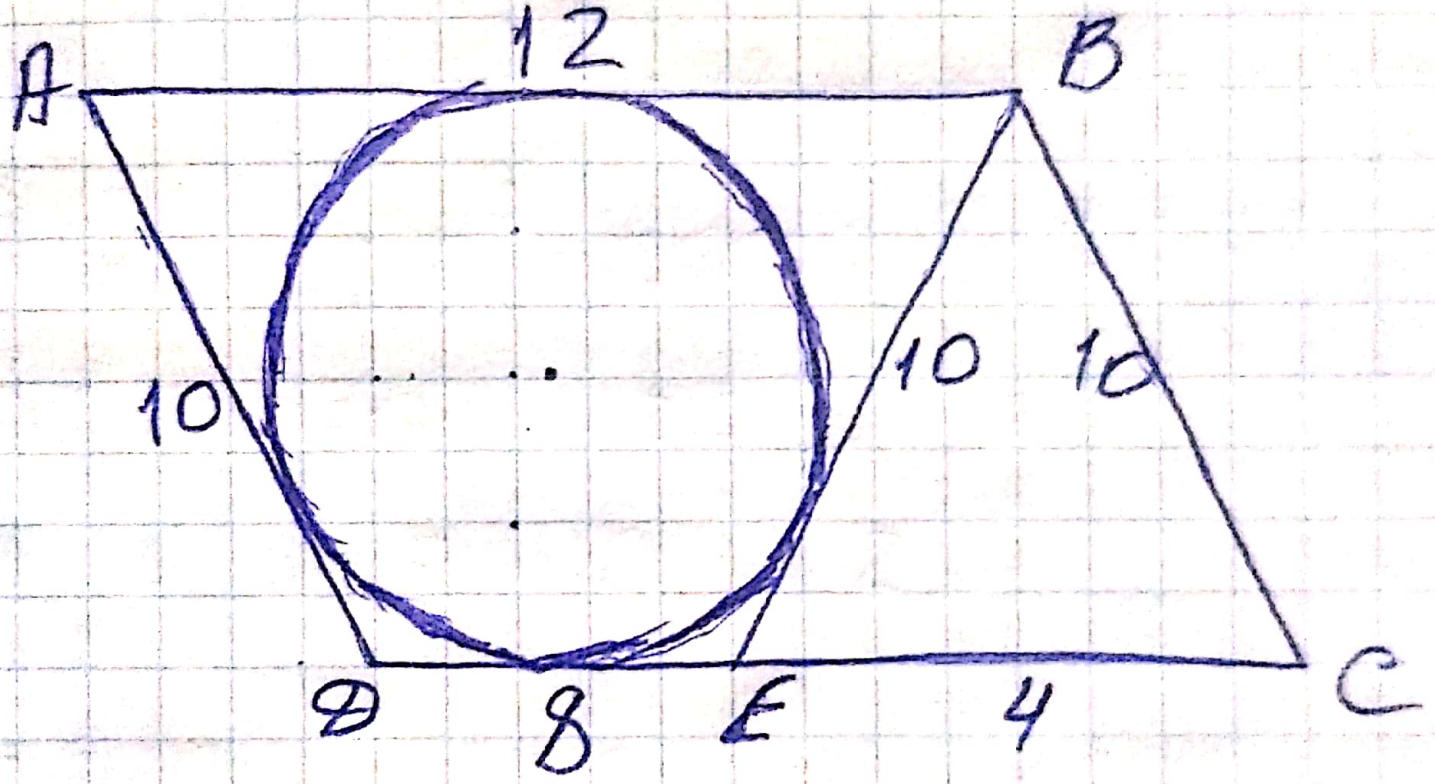
$360° - 276 = 84°$

34. *ABCD* parallelogramm va *ABED* to'rtburchakka aylana ichki chizilgan. Agar *DE*=8, *AB*=12 bo'lsa, *BEC* uchburchakning perimetrini toping.



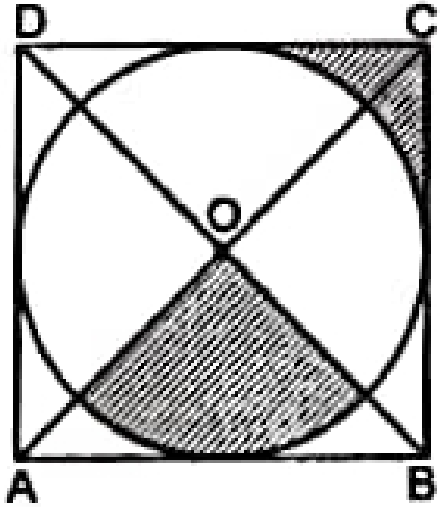
- ○ 27
- ○ 25
- ○ 22
- ◉ 24

(34)



$P_{BEC} = 10 + 10 + 4 = 24$

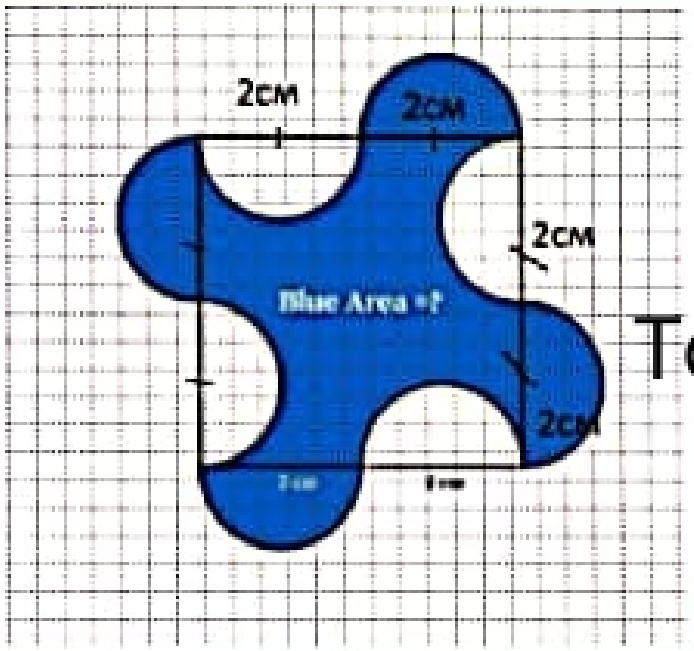
35. *O* markazli aylana tomoni 8 ga teng bo'lgan *ABCD* kvadratga ichki chizilgan bo'lsa, bo'yalgan sohani yuzini



To'g'ri javob 16

toping.

- 12
- 32
- 16
- 24



To'g'ri javob 16

39. Bo'yalgan yuzani toping. (cm^2)

- ○ *Aniqlab bo'lmaydi*
- ○ 12
- ○ 18
- ◉ 16