

DĚi gvj v

Gm Gm im fcmg

BDıbu 1

cıVıEı gj-ıqb 1.1

1. N 2. L3. L 4. L 5. K 6. N 7. K 8. M 9. V 10. M

cıVıEı gj-ıqb 1.2

1. N 2. K 3. L 4. K 5. L

cıVıEı gj-ıqb 1.3

1. L 2. M3. M

cıVıEı gj-ıqb 1.4

1. L 2. M3. L 4. K

PıvıEı gj-ıqb

2. (i) {4} (ii) {0, 1, -1, 2, -2, 3, -3}
 (iii) \emptyset (iv) $\{1, \frac{1}{2}, \frac{1}{3}, 2, \frac{2}{3}, 3, \frac{3}{2}\}$

BDıbu 2

Abıyız bx 2.1

1. \mathbb{N} \mathbb{R} K i ab

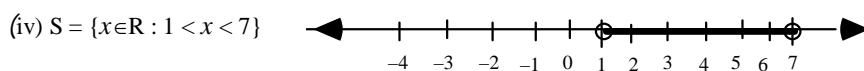
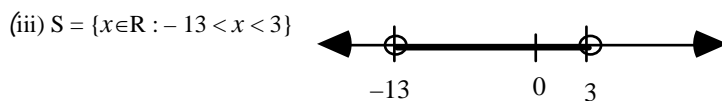
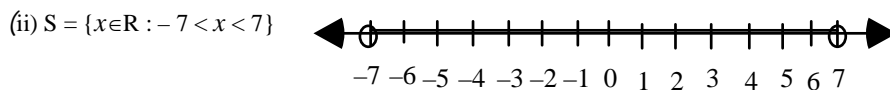
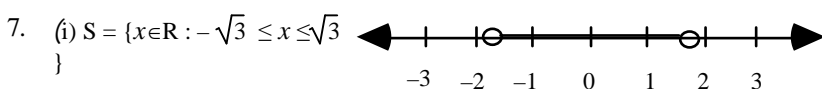
2. (i) 2 (ii) 6 (iii) 3 (iv) $\sqrt{3} + 4$

3. 0.010010001..., 0.001000100001...

4. 1.3010010001...

5. 0.3178

6. (i) 6.2424 (ii) 0.2071 (iii) 0.5818



8. (i) $S = \{x \in \mathbb{R} : -1 < x < 4\}$

- (ii) $S = \{x \in \mathbb{R} : -\frac{7}{2} \leq x \leq \frac{-9}{4}\}$

BDibU 3

Ablyj bx 3.1

1. $4x^2+12xy+9y^2$
2. $a^2y^2 + 6abxy + 9b^2x^2$
3. $x^2 + \frac{1}{x^2} + 2$
4. $x^4y^2 - 2x^3y^3 + x^2y^4$
5. $p^4 - 4p^2q^2 + 4q^2$
6. $4x^2 + 9y^2 + 16z^2 + 12xy + 24yz + 16zx$
7. $9x^2 + 4y^2 + 16z^2 - 12xy + 16yz - 24zx$
8. $a^2+b^2+c^2+d^2-2ab+2ac-2ad-2bc+2bd-2cd$

Ablyj bx 3.2

1. 74
2. 144
3. 135
4. p^2+2q
5. 34
6. $\frac{1}{6}$
7. 26
8. 2
9. 3
10. 83
11. $2p^2-2q, 6$
12. 14

Ablyj bx 3.3

1. 74, 35
2. ± 63
3. ± 2
4. 5
5. 89, 9
7. (i) 7^2-2^2 (ii) $(x-1)^2-8^2$

Ablyj bx 3.4

1. (i) $a^3+9a^2b+27ab^2+27b^3$
 (ii) $27-54a+36a^2-8a^3$
 (iii) $8p^6-36p^4r^2+54p^2r^4-27r^6$
 (iv) $x^3+y^3+z^3+3x^2y+3x^2z+3xy^2+3xz^2+3y^2z+3yz^2+6xyz$
 (v) $8m^3+27n^3-125p^3+36m^2n-60m^2p+54mn^2+150mp^2-135n^2p+225np^2-180mnp$
 (vi) 991026973
2. 18
3. 4
4. 54
5. m^3-3mn
7. $8x^3$

Ablyj bx 3.5

1. $x^2+16x+60$
2. $x^2+20x+75$
3. $4x^2+16x+15$
4. x^2-x-56
5. $x^2+2x-15$
6. $64+8(a-2b)-2ab$
7. $49x^2+7x-20$
8. $25-5(x+y)+xy$
9. $x^3+(a-b-c)x^2+(bc-ca-ab)x+abc$
10. $x^3+15x^2+74x+120$
11. $x^4+14x^3+48x^2+154x+120$

Ablyj bx 3.6

1. 213164
2. 12
3. 315
4. ± 143
5. -1930
10. $\frac{1}{2}(3pq^2-p^3+6r^3)$

BDıbu 4

cıW ce@çlyııjıPbv

- $(a-b)(a-c)$
- $(ax+by)(mx+ny+1)$
- $(x+y)(a-1)$

Ablyıj bx 4.1

- $(7x-2y)(x+2y)$
- $(a+b-2c)(a-b+2c)$
- $(a+b-3c)(a+b-3c+1) (a+b-3c-1)$
- $x(x^4+a^4)(x^2+a^2)(x+a)(x-a)$
- $(m+2n-1)(m-2n+1)$
- $(a^2+a+1)(a^2-a+1)$
- $(8x^2+4ax+a^2)(8x^2-4ax+a^2)$
- $a(x^2+2ax+2a^2)(x^2-2ax+2a^2)$
- $(a+x)(a-x)(3a+5x)(3a-5x)$
- $(x^2y^2+xyz+z^2)(x^2y^2-xyz+z^2)$
- $(3x-4y)(3x+4y-2z)$

Ablyıj bx 4.2

- $x(y+4)(y^2-4y+16)$
- $(3+2abc)(9-6abc+4a^2b^2c^2)$
- $\left(a + \frac{1}{2}\right)\left(a^2 - \frac{a}{2} + \frac{1}{4}\right)$
- $2a(a^2+3b^2)$
- $(a+b)^2(a^4-2a^3b+6a^2b^2-2ab^3+b^4)$
- $3x(2x-1)(4x^2+2x+1)$
- $\left(a - \frac{1}{3}\right)\left(a^2 + \frac{a}{3} + \frac{1}{9}\right)$
- $(1-5ab)(1+5ab+25a^2b^2)$
- $\left(\frac{a^2}{3} - b^2\right)\left(\frac{a^4}{9} + \frac{a^2b^2}{3} + b^4\right)$
- $a(b-2)(b^2+2b+4)$
- $(a-7b)(37a^2-14ab+13b^2)$
- $(2a-3)(4a^2+12a+21)$
- $(a-3)(a^2-3a+3)$
- $(a-b)(2a^2+5ab+8b^2)$

Ablyıj bx 4.3

- $(x+8)(x+12)$
- $(a-25)(a-26)$
- $(x-20)(x+1)$
- $(1-x)(5+x)$
- $(ab+7)(ab-15)$
- $(x^2+2x+15)(x+3)(x-1)$
- $(a^2+b^2+4)(a^2+b^2-22)$
- $(x^2+6x+7)(x^2+6x-12)$
- $(x+a+1)(x-a-2)$
- $(x+4a-2)(x-3a+2)$
- $(x+ab)(x+c)$
- $(x-a)\left(x - \frac{1}{a}\right)$

Ablyıj bx 4.4

- $(4x+9)(3x+2)$
- $(2x-5)(6x-4)$
- $(2x+y)(7y-6x)$
- $y^2(x+1)(9x-14)$
- $(a+3)(a-3)(4a^2+9)$
- $-2(2x-1)(3x+4)$

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7. $\frac{1}{2}(x+2)(x+5)$
8. $2x(ax+ay-bx+by)$
9. $(x+y)(ax-mx+my-ny)$
10. $(x+y)(ax+bx-ay+by)$
11. $(x+a)(ax+1)$
12. $(x+ay+y)(ax-x+y)$

Ablyj bx 4.5

1. $(a-b-c)(a^2+b^2+c^2+ab-bc+ca)$
2. $(3x+y-1)(9x^2+y^2+1-3xy+3x+y)$
3. $(2x-5y+3z)(4x^2+25y^2+9z^2+10xy+15yz-6zx)$
4. $\left(x-\frac{y}{2}+\frac{z}{3}\right)\left(x^2+\frac{y^2}{4}+\frac{z^2}{9}+\frac{xy}{2}+\frac{yz}{6}-\frac{zx}{3}\right)$
5. $\left(a+\frac{b}{3}-\frac{c}{4}\right)\left(a^2+\frac{b^2}{9}+\frac{c^2}{16}-\frac{ab}{3}+\frac{bc}{12}+\frac{ca}{4}\right)$
6. $(2x^2+x+3)(4x^4-2x^3-5x^2-3x+9)$
7. $\left(a-\frac{1}{a}+3\right)\left(a^2-3a+10+\frac{3}{a}+\frac{1}{a^2}\right)$
8. $\left(a-\frac{1}{a}+1\right)\left(a^2-a+2+\frac{1}{a}+\frac{1}{a^2}\right)$
9. $2(x+y+z)(x^2+y^2+z^2-xy-yz-zx)$
10. $3(a+b-2c)(b+c-2a)(c+a-2b)$

BDıbu 5

Ablyj bx 5.1

1. $x-y$
2. $x+1$
3. $x^2(x+y)$
4. $2a-1$
5. $2a+b$
6. $a+b+c$
7. $5(a^2+1)$
8. $2(x-2y)$

Ablyj bx 5.2

1. $10x^5y^5z^4$
2. $105a^7b^3c^7$
3. $(a+b)^2(a-b)$
4. $2(x-1)(x-2)(x+3)$
5. $(x+2)^2(x^3-8)$
6. $a^2(a+2)(a+4)(a-5)$
7. $x^3y^3(x-1)(x-2)(x-3)$
8. $ax(x^2-a^2)(x^2-c^2)$
9. x^6-y^6
10. $60x^3y^4(x^2-4y^2)(2x+3y)(3x-4y)$

BDıbu 6

Abıxyj bx 6.1

4. $a^2 t b^2$ 5. $rs t qt, 24 t 25$

Abıxyj bx 6.2

1. ± 6

Abıxyj bx 6.3

1. $8 t 3,$ 3. $2,$ 8. $0,$ 10. $(t_1 + t_2) t t_1$

BDıbu 7

Abıxyj bx 7.1

1. $\frac{2t_1 t_2}{t t_1 + t_2}, 14.4 t m t K U$

2. $\frac{m_1 + m_2}{60 \left(\frac{1}{v_1} - \frac{1}{v_2} \right)}$ *ıK.ıg, 15 ıK.ıg.*

3. $\frac{s}{v_1 + v_2}$ *NıUıv,* $\frac{s}{v_1 - v_2}$ *NıUıv, hıvı qıvı mgq 2 NÈv, Avıvıvı mgq 6 NÈv*

4. $\left\{ s + \frac{1 - \left(\frac{1}{p} + \frac{1}{q} - \frac{1}{r} \right) s}{\frac{1}{p} + \frac{1}{q}} \right\}, 7\frac{1}{2}$ *ıgıvıU*

5. $[c + \{1 - (\frac{1}{a} + \frac{1}{b})c\}b], 6$ *ı b |*

6. $95 Rb, 60 UıKıv$

7. $\frac{v_1 v_2 h}{v_2 - v_1}$ *ıK.ıg. 44 ıK.ıg.*

8. $\frac{1}{\frac{1}{t_1} + \frac{1}{t_2} - \frac{1}{t_3}}$ *ıgıvıU, 9 ıgıvıU |*

9. $3600 UıKıv$

Abıxyj bx 7.2

1. $q^2 t pr$ 2. $p^2 T q^2$ 3. $r_1^2 t r_2^2$ 4. $mx, my, 27, 36$

5. $K Gi teZb \frac{pt}{q-r}, L-Gi teZb \frac{qt}{q-r}, M-Gi teZb \frac{rt}{q-r}$

6. $\frac{mprs}{prs + q^2s + qr^2}$ *UıKıv,* $\frac{mq^2s}{prs + q^2s + qr^2}$ *UıKıv,* $\frac{mqr^2}{prs + q^2s + qr^2}$ *UıKıv*
 180 *UıKıv,* 192 *UıKıv,* 200 *UıKıv*

7. $(t_1 + t_2) t t_1, 2t$ *ıgıvıU*

9. $x^{2^{n-1}} + y^{2^{n-1}}$

Ablyj bx 8.3

1. (i) 3 (ii) -3 (iii) $\frac{5}{2}$ (iv) 4 (v) $\frac{1}{2}$ (vi) $\frac{13}{3}$
2. (i) 27 (ii) $\frac{1}{625}$ (iii) 32 (iv) 6 (v) $\frac{5}{4}$ (vi) 4
3. (i) 3 (ii) 1 (iii) 0 (iv) -1 (v) -4
9. (i) 2.25×10^2 (ii) 3.75×10^{-3} (iii) 4.32×10^8
 (iv) 6.25×10^{-1} (v) 4.56×10^{-8}
10. (i) 100000 (ii) 0.001 (iii) 2230000 (iv) 0.000378
 (v) 653.2 (vi) 0.0000000165
11. $\log \frac{125}{108}$ 12. $\log \frac{144}{25}$

Ablyj bx 8.4

1. (i) 0.73424 (ii) 0.63598
2. (i) 2.65896 (ii) 1.62695 (iii) 0.79726 (iv) -1.19709
3. (i) 5.7956 (ii) 6165.95 (iii) 0.0005703
4. (i) 7.735 (ii) 27.3492 (iii) 14.4672
5. (i) 2.5895 (ii) 2.3616 (iii) 3.48
6. 885.78 *UvKv (c0q)* 7. 22.5 *eQi (c0q)*

Ablyj bx 8.5

1. $\frac{a^2+b^2}{ab(a+b)}$
2. 1, 3. 1, 4. 1, 5. $\left(\frac{p}{q}\right)^{p+q}$
7. $\frac{1}{2}$ 8. (i), (ii) $\frac{3}{2}$, 9. 0.16376
10. 0, 11. 1.5×10^8 , 12. 6, 13. 6

BDıBU 9

Ablyj bx 9.1 (K)

1. 2 2. 1 3. pq 4. $-\frac{7}{2}$ 5. $\frac{5}{2}$
6. $2(1+\sqrt{2})$ 7. $\sqrt{3}$ 8. $2(a+b)$

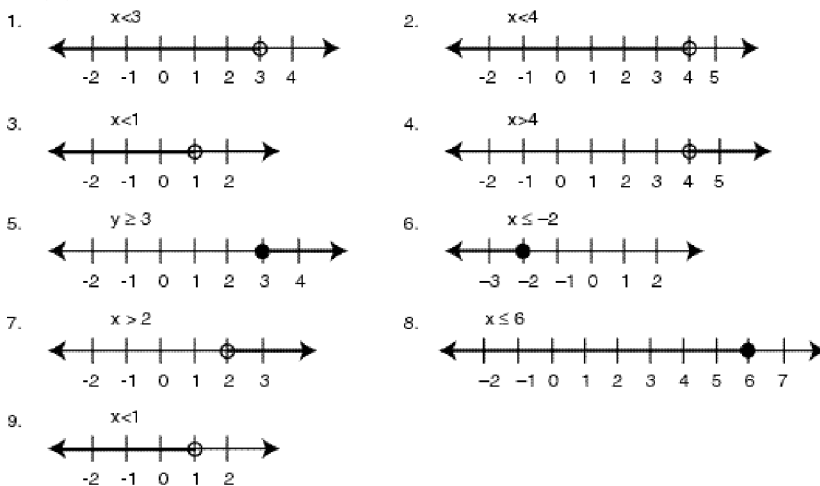
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9. $-\frac{117}{168}$ 10. $\frac{a+b}{2}$ 11. $\{-b\}$ 12. $\left\{\frac{b+c}{2}\right\}$ 13. $\left\{\frac{9}{2}\right\}$
 14. $\left\{\frac{3}{2}\right\}$ 15. $\{-(p^2+q^2+r^2)\}$ 16. $\left\{\frac{a+b}{2}\right\}$
 17. $\left\{-\frac{1}{5}\right\}$ 18. $\{-1\}$ 19. $\{ \} \in \mathbb{V}, \phi$

Ablyj bx 9.1 (L)

1. 15, 45 2. $\frac{3}{4}$ 3. $\frac{3}{5}$ 4. 27 5. 52 6. 40°
 7. cBk cqmvi gÿŕ 80U Ges `k cqmvi gÿŕ 20U
 8. 10 9. 72 10. 50 11. 80 K.ig. 12. 1000 UvKv/

Ablyj bx 9.2 (K)



Ablyj bx 9.2 (L)

1. $x+x+80 \leq 630, x \leq 275$ 2. $10x + 10x \leq 500, x \leq 25$
 3. $2x + (x+3) < 18, x < 5$ 4. $4 < x < 8$
 5. $\text{wZvi eqm} \leq 38 \text{ eQi}$ 6. $16 < x < 18$
 7. $\text{mgq } t \text{ tmtKŪ ntj } t \geq 500$ 8. $\text{DÇqtbi mgq } t \text{ NÈv ntj } t \geq \frac{1}{2}$
 9. 1, 2, 3, 4, 5 10. $\text{mgq } t \text{ NÈv ntj } t \geq \frac{25}{70}$

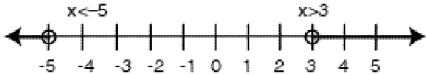
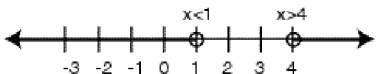
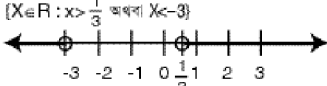
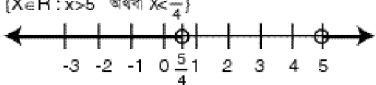
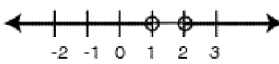
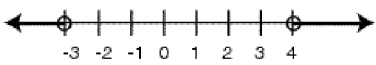
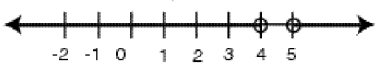
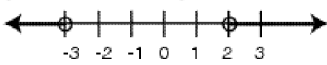
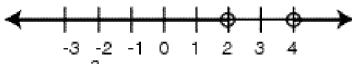
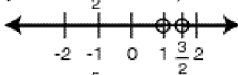
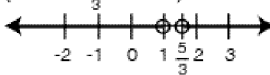
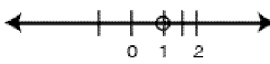
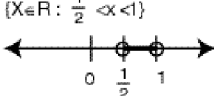
Ablyj bx 9.3 (K)

1. $\{-2, 4\}$ 2. $\{\sqrt{2}, -5\}$ 3. $\left\{1, \frac{25}{2}\right\}$ 4. $\left\{3, \frac{5}{3}\right\}$ 5. $\left\{-5, \frac{4}{5}\right\}$
 6. $\{8, 3\}$ 7. $\{-9, -8\}$ 8. $\{10, -10\}$ 9. $\left\{2, \frac{1}{6}\right\}$ 10. $\left\{-\frac{2}{3}; 2\right\}$
 11. $\{0, (p+q)\}$ 12. $\{7, -7\}$ 13. $\{\sqrt{mn}, -\sqrt{mn}\}$ 14. $\{-p, -q\}$
 15. $\left\{4a; \frac{5a}{2}\right\}$ 16. $\{1, -1\}$ 17. $\{2\}$ 18. $\left\{\frac{1}{3}; 1\right\}$ 19. $\{0, 2k\}$ 20. $\{1, 2\}$

Abkxj bx 9.3 (L)

1. 8 2. $\frac{5}{8}$ 3. 64 ev 46 4. 8tm.ig., 6 tm.ig.
 5. 120 eMtm.ig. 6. 54 eMtm.ig. 7. 13 tm.ig.
 8. 52 igUvi 9. 4 igUvi 10. $\hat{\sim} N^{\circ}30$ igUvi Ges cŦ'25 igUvi
 11. 8 tm.ig. 12. 80 Rb 13. 20 14. 10% 15. 20W/

Abkxj bx 9.4 (K)

1. $\{X \in \mathbb{R} : x < -5 \text{ অথবা } x > 3\}$

2. $\{X \in \mathbb{R} : x > 4 \text{ অথবা } x < 1\}$

3. $\{X \in \mathbb{R} : x > \frac{1}{3} \text{ অথবা } x < -3\}$

4. $\{X \in \mathbb{R} : x > 5 \text{ অথবা } x < \frac{5}{4}\}$

5. $\{X \in \mathbb{R} : x > 2 \text{ অথবা } x < 1\}$

6. $\{X \in \mathbb{R} : x > 4 \text{ অথবা } x < -3\}$

7. $\{X \in \mathbb{R} : x > 5 \text{ অথবা } x < 4\}$

8. $\{X \in \mathbb{R} : x > 2 \text{ অথবা } x < -3\}$

9. $\{X \in \mathbb{R} : x > 4 \text{ অথবা } x < 2\}$

10. $\{X \in \mathbb{R} : x > \frac{3}{2} \text{ অথবা } x < 1\}$

11. $\{X \in \mathbb{R} : x > \frac{5}{3} \text{ অথবা } x < 1\}$

12. $\{x \in \mathbb{R} : 1 < x < 2\}$

13. $\{X \in \mathbb{R} : \frac{1}{2} < x < 1\}$


Ablyj bx 9.4 (L)

1. 5, 10 2. 19, 20 3. 28, 30 4. 8, 12

BDıbu 10

Pevší Ablyj bx

10. 53.9 ıgUvi

BDıbu 11

Ablyj bx 11.1

- | | |
|-----------------------------------|------------------------------------|
| 1. $msMıZcY,^{\circ}mgvavb Abb''$ | 2. $msMıZcY,^{\circ}mgvavb AmsL''$ |
| 3. $msMıZcY,^{\circ}mgvavb Abb''$ | 4. $AmsMıZcY,^{\circ}mgvavb bıB$ |
| 5. $msMıZcY,^{\circ}mgvavb Abb''$ | 6. $msMıZcY,^{\circ}mgvavb Abb''$ |

Ablyj bx 11.2

- | | | | |
|---|--|-----------------------------------|--|
| 1. (2, -3) | 2. (1,5) | 3. (1,1) | 4. (8, 3) |
| 5. (6, 8) | 6. (-2, 4) | 7. $(\frac{1}{2}, -1)$ | |
| 8. (a, b) | 9. (2, -3) | 10. (1,1) | 11. (8,0) |
| 12. (2, 0) | 13. (6, -5) | 14. (0,3) | |
| 15. $(\frac{22}{9}, \frac{8}{9})$ | 16. $(\frac{ab}{a+b}, \frac{ab}{a+b})$ | 17. $\frac{16}{19}, \frac{5}{19}$ | 18. (0, 2b) |
| 19. (4, -5) | 20. ((7,0) | 21. (11,15) | 22. (7, -5) |
| 23. $(\frac{1}{2}, -1)$ | 24. $(\frac{5}{4}, -\frac{1}{3})$ | 25. (1, -1) | |
| 26. $(\frac{ab}{a+b}, \frac{-ab}{a+b})$ | 27. (c,a) | 28. (0,2b) | 29. ((1,2) |
| 30. (2,1) | 31. (8,12) | 32. $(\frac{1}{2}, \frac{1}{3})$ | 33. (3, 4) |
| 34. (3, 6) | 35. (7, 4) | 36. (a,b) | 37. (a,b) |
| | | | 38. (a ² , b ²) |

Ablyj bx 11.3

- | | | | | |
|--|--------------------|--------|---------------------------|-------|
| 1. $\frac{4}{5}$ | 2. $\frac{15}{26}$ | 3. 2,4 | 4. $\frac{3}{8}$ | 5. 27 |
| 6. 25 | 7. 43 | 8. 7.4 | 9. 6 ıKıg/NÈv, 3 ıKıg/NÈv | |
| 10. $\hat{\sim}N^{\circ}20$ ıgUvi, cŦ'15 ıgUvi | | | | |
| 11. ıczvi eqm 36 ermi, cŦ'ı eqm 15 ermi | | | | |
| 12. ıczvi eqm 68 ermi, cŦ'ı eqm 32 ermi | | | | |
| 13. $\frac{5}{8}$ ıKıg/NÈv, $\frac{3}{8}$ ıK.ıg./NÈv | | | | |
| 14. $\hat{\sim}N^{\circ}18$ ıgUvi, cŦ'12 ıgUvi | | | | |

BDıbu 12

Ablyj bx 12.1

1. 210 2. 66 3. m^2+mn+n^2 4. 3321
 5. $\frac{5n(n+1)}{2}$ 6. 1425 7. 30 8. 1771
 9. 50 10. 2024 11. 1581525

Ablyj bx 12.2

1. $\frac{21}{32}$ 2. $\frac{\sqrt{3}}{2}$ 3. 1.5 (Cıq) 4. 16, 64
 5. 14763 6. 1275 7. $36 \log 3$ 8. 6560
 9. 1024 10. 9.

BDıbu 13

Ablyj bx 13.4

11. $20^\circ, 110^\circ$ 12. 120°

BDıbu 21

Ablyj bx 21.1

1. $1g \text{ tPŠKY}, 1g \text{ tPŠKY}, 3q \text{ tPŠKb}, 1g \text{ tPŠKY}$
 2. $\frac{3\pi^c}{4}, \frac{29\pi^c}{72}, \frac{29\pi^c}{250}, 0.642\pi^c$
 3. $30^0, 63^0, 108^0, 56^0 15'$
 4. $\frac{1}{2}(1+\frac{\pi}{180})^c, \frac{1}{2}(1-\frac{\pi}{180})^c, \frac{1}{2}(\frac{180}{\pi}+1)^0, \frac{1}{2}(\frac{180}{\pi}-1)^0$
 5. $30^0, 60^0, 90^0, \frac{\pi^c}{6}, \frac{\pi^c}{3}, \frac{\pi^c}{2}$

Ablyj bx 21.2

1. $\frac{1}{\sqrt{10}}, \frac{3}{\sqrt{10}}$ 2. $\frac{2}{3}, \frac{\sqrt{5}}{2}$ 18. $\frac{16}{63}$

Ablyj bx 21.3

1. 0 2. $\frac{5}{4}$ 3. $\frac{3}{4}$
 4. $-\frac{1}{8}$ 5. $\frac{3}{2}$ 10. $0^\circ, 90^\circ$
 11. 45° 12. $45^\circ, 60^\circ$ 13. 45°

Gm Gm um t cMg

Ablyj bx 21.4

1. 34.6 ugUvi (cMg)
2. b`xi cM' = 86.603 ugUvi (cMg)
3. 56.784 ugUvi (cMg)
4. 21.65 ugUvi (cMg), 12.5 ugUvi
5. 15 ug: (cMg)
6. 0.37 K.ug. (cMg)

BDıbu 22

Pevš' Ablyj bx

1. 1056 eM^gugUvi
2. 4 ugUvi
3. 50 ugUvi, 40 ugUvi
4. 16 ugUvi, 12 ugUvi
5. 1.5 ugUvi
6. 17.26 tmiq. (cMg)
7. 14040 eM^gtmiq.
8. 10 ugUvi, 2 ugUvi
9. 4.90
10. 301.71 eM^gtmiq. 301.71 Nb tmiq.
11. 314.28 Nb tmiq, 204.28 eM^gtmiq.
12. 147.08 Ktj vMg
13. 43120.00 UvKv
14. $r = \frac{\sqrt{5}}{2} h$
15. 8 tmiq.