Вариант - 1  
1. a) 1/66; b) 1/1995840.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,4234.  
  
6. 0,9356.  
  
7. 0,5.  
  
8. 0,55  
  
9. 0,0052  
  
10. a)0,0924; b) 0,6026  
  
11. 0,2221.  
  
12. MX = 3; DX = 2; σ(X) = 1,4142

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

13. M(X) = 1,6; D(X) = 0,96.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,12960 | 0,34560 | 0,34560 | 0,15360 | 0,02560 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 3,8 + 5p; D(X) = 10,96 -13p - 25p^2; M(Y) = 2; D(Y) = 1,2;
в) M(Z1) = 9,6 + 10p; D(Z1) = 45,04 -52p - 100p^2; M(Z2) = 7,6 + 10p; D(Z2) = 74,32 -22p - 100p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 8 | 9 | 12 | 13 | 16 | 17 |
| 15 | P | 0,04 | 0,04 | 0,4p | 0,4p | 0,2 | 0,2 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 6 | 9 | 10 | 15 | 14 | 21 |
| 15 | P | 0,04 | 0,04 | 0,4p | 0,4p | 0,2 | 0,2 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3556  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 11,4 < X < 12,6.  
  
20. a) A = ± 0,5; б) A = 0,5  
  
21. 0,0167.

Вариант - 2  
1. а) 1/132; б) 5/66.  
  
2. a) (C(11, 3) + C(11, 8)/C(16, 8)); б) C(5, 3)C(11, 5) + C(5, 4)C(11, 4) + C(5, 5)C(11, 3)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. а) 0,09; б) 0,21 в) 0,49.  
  
5. 0,195  
  
6. 0,9093.  
  
7. 0,3882.  
  
8. 0,59  
  
9. 0,0003  
  
10. a)0,0731; b) 0,7054  
  
11. 0,1994.  
  
12. MX = 3; DX = 2; σ(X) = 1,4142

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

13. M(X) = 1,5; D(X) = 1,05.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,16807 | 0,36015 | 0,30870 | 0,13230 | 0,02835 | 0,00243 |

14. M(X) = 6.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (6^0)/0! \* e^-6 | (6^1)/1! \* e^-6 | ... | (6^n)/n! \* e^-6 | ... |

15. а) M(X) = 3,1 + 6p; D(X) = 10,29 -1,2000000000000028p - 36p^2; M(Y) = 1,9; D(Y) = 3,09;
в) M(Z1) = 8,1 + 12p; D(Z1) = 44,25 -4,8p - 144p^2; M(Z2) = 5,89 + 11,4p; D(Z2) = 98,6379 + 106,908p - 129,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 6 | 13 | 16 | 15 | 18 |
| 15 | P | 0,09 | 0,12 | 0,3p | 0,4p | 0,12 | 0,16 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 4 | 6 | 24 | 7 | 28 |
| 15 | P | 0,09 | 0,12 | 0,3p | 0,4p | 0,12 | 0,16 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,2.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,625; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 8,4 < X < 9,6.  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,0441.

Вариант - 3  
1. a) 1/45; b) 1/75600.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. а) 0,15; б) 0,35 в) 0,35.  
  
5. 0,28  
  
6. 0,9548.  
  
7. 0,3333  
  
8. 0,3652.  
  
9. 0,0001  
  
10. a)0,0771; b) 0,6628  
  
11. 0,2405.  
  
12. M(X) = 3,3616, D(X) = 2,57, σ(X) = 1,6031.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,16 | 0,128 | 0,1024 | 0,4096 |

13. M(X) = 0,8; D(X) = 0,64.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,40960 | 0,40960 | 0,15360 | 0,02560 | 0,00160 |

14. MX = 30

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (30^0)/0! \* e^-30 | (30^1)/1! \* e^-30 | ... | (30^n)/n! \* e^-30 | ... |

15. а) M(X) = 3 + 4p; D(X) = 12 -8p - 16p^2; M(Y) = 1,1; D(Y) = 1,89;
в) M(Z1) = 7,1 + 8p; D(Z1) = 49,89 -32p - 64p^2; M(Z2) = 3,3 + 4,4p; D(Z2) = 54,21 + 20,56p - 19,36p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 8 | 9 | 10 | 11 | 18 | 19 |
| 15 | P | 0,02 | 0,06 | 0,1p | 0,3p | 0,03 | 0,09 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 6 | 9 | 8 | 12 | 16 | 24 |
| 15 | P | 0,02 | 0,06 | 0,1p | 0,3p | 0,03 | 0,09 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,2.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,575; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 2,5 < X < 5,5.  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,1112.

Вариант - 4  
1. а) 1/110; б) 3/22.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,2813.  
  
6. 0,9318.  
  
7. 0,3333  
  
8. 0,2857.  
  
9. 0,9999.  
  
10. а) 0,005795458919266228; б) 0,0017.  
  
11. 0,6879  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. MX = 3,2; DX = 0,64

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00160 | 0,02560 | 0,15360 | 0,40960 | 0,40960 |

14. M(X) = 6.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (6^0)/0! \* e^-6 | (6^1)/1! \* e^-6 | ... | (6^n)/n! \* e^-6 | ... |

15. а) M(X) = 1,6 + 6p; D(X) = 7,44 + 16,8p - 36p^2; M(Y) = 1,5; D(Y) = 1,65;
в) M(Z1) = 4,7 + 12p; D(Z1) = 31,41 + 67,2p - 144p^2; M(Z2) = 2,4 + 9p; D(Z2) = 33,24 + 97,2p - 81p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 5 | 13 | 15 | 15 | 17 |
| 15 | P | 0,06 | 0,08 | 0,3p | 0,4p | 0,06 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 3 | 6 | 18 | 7 | 21 |
| 15 | P | 0,06 | 0,08 | 0,3p | 0,4p | 0,06 | 0,08 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,3.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,575; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 14,1 < X < 15,9.  
  
20. а) 0,000386; б) 0,0003264; в) 0,00027596.  
  
21. 0,1112.

Вариант - 5  
1. a) 1/55; b) 1/831600.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. а) 0,1; б) 0,4 в) 0,4.  
  
5. 0,375  
  
6. 0,9075.  
  
7. 0,3706.  
  
8. 0,3214.  
  
9. 0,0052  
  
10. a)0,0837; b) 0,6406  
  
11. 0,2272.  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. MX = 3,6; DX = 1,44

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 13 | P | 0,00410 | 0,03690 | 0,13820 | 0,27650 | 0,31100 | 0,18660 | 0,04670 |

14. MX = 20

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (20^0)/0! \* e^-20 | (20^1)/1! \* e^-20 | ... | (20^n)/n! \* e^-20 | ... |

15. а) M(X) = 1,5 + 6p; D(X) = 4,25 + 18p - 36p^2; M(Y) = 0,7; D(Y) = 1,41;
в) M(Z1) = 3,7 + 12p; D(Z1) = 18,41 + 72p - 144p^2; M(Z2) = 1,05 + 4,2p; D(Z2) = 11,2475 + 59,58p - 17,64p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 13 | 15 | 15 | 17 |
| 15 | P | 0,04 | 0,08 | 0,1p | 0,2p | 0,01 | 0,02 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 6 | 18 | 7 | 21 |
| 15 | P | 0,04 | 0,08 | 0,1p | 0,2p | 0,01 | 0,02 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,4.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,725; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. -0,64 < X < 0,64  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,0674.

Вариант - 6  
1. а) 1/132; б) 5/66.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. а) 0,12; б) 0,48 в) 0,32.  
  
5. 0,174  
  
6. 0,0933  
  
7. 0,3778.  
  
8. 0,715  
  
9. 0,0052  
  
10. а) 0,000001089980151783; б) 0,9663.  
  
11. 0,8473  
  
12. MX = 3,5; DX = 2,9167; σ(X) = 1,7078

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | P | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 |

13. M(X) = 0,9; D(X) = 0,63.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 |
| 13 | P | 0,34300 | 0,44100 | 0,18900 | 0,02700 |

14. M(X) = 1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (1^0)/0! \* e^-1 | (1^1)/1! \* e^-1 | ... | (1^n)/n! \* e^-1 | ... |

15. а) M(X) = 3,5 + 4p; D(X) = 13,65 -11,999999999999998p - 16p^2; M(Y) = 0,8; D(Y) = 1,36;
в) M(Z1) = 7,8 + 8p; D(Z1) = 55,96 -48p - 64p^2; M(Z2) = 2,8 + 3,2p; D(Z2) = 43,96 + 14,08p - 10,24p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 19 | 21 |
| 15 | P | 0,08 | 0,08 | 0,2p | 0,2p | 0,06 | 0,06 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 9 | 27 |
| 15 | P | 0,08 | 0,08 | 0,2p | 0,2p | 0,06 | 0,06 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,3.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,6; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 4,4 < X < 5,6.  
  
20. a) A = ± 0,5; б) A = 0,5  
  
21. 0,204.

Вариант - 7  
1. а) 1/90; б) 1/9.  
  
2. a) (C(11, 3) + C(11, 8)/C(16, 8)); б) C(5, 1)C(11, 7) + C(5, 2)C(11, 6) + C(5, 3)C(11, 5) + C(5, 4)C(11, 4) + C(5, 5)C(11, 3)/C(16, 8)  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,195  
  
6. 0,9318.  
  
7. 0,3765.  
  
8. 0,65  
  
9. 0,9987.  
  
10. а) 0,000046347135412408; б) 0,9663.  
  
11. 0,6832  
  
12. MX = 3; DX = 2; σ(X) = 1,4142

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

13. M(X) = 1,2; D(X) = 0,84.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,24010 | 0,41160 | 0,26460 | 0,07560 | 0,00810 |

14. MX = 30

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (30^0)/0! \* e^-30 | (30^1)/1! \* e^-30 | ... | (30^n)/n! \* e^-30 | ... |

15. а) M(X) = 2 + 4p; D(X) = 12,6 + 0p - 16p^2; M(Y) = 0,8; D(Y) = 1,36;
в) M(Z1) = 4,8 + 8p; D(Z1) = 51,76 + 0p - 64p^2; M(Z2) = 1,6 + 3,2p; D(Z2) = 30,64 + 21,76p - 10,24p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 19 | 21 |
| 15 | P | 0,02 | 0,02 | 0,2p | 0,2p | 0,04 | 0,04 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 9 | 27 |
| 15 | P | 0,02 | 0,02 | 0,2p | 0,2p | 0,04 | 0,04 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2444  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,85; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 13,4 < X < 14,6.  
  
20. a) A = ± 0,5774; б) A = 0,5774  
  
21. 0,1112.

Вариант - 8  
1. а) 1/156; б) 7/52.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,256  
  
6. 0,0761  
  
7. 0,3438.  
  
8. 0,6143  
  
9. 0,0023  
  
10. a)0,0968; b) 0,6406  
  
11. 0,2393.  
  
12. M(X) = 3,3616, D(X) = 2,57, σ(X) = 1,6031.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,16 | 0,128 | 0,1024 | 0,4096 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. M(X) = 9.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (9^0)/0! \* e^-9 | (9^1)/1! \* e^-9 | ... | (9^n)/n! \* e^-9 | ... |

15. а) M(X) = 5,1 + 4p; D(X) = 10,89 -24,8p - 16p^2; M(Y) = 1,9; D(Y) = 3,09;
в) M(Z1) = 12,1 + 8p; D(Z1) = 46,65 -99,2p - 64p^2; M(Z2) = 9,69 + 7,6p; D(Z2) = 153,3339 -40,088p - 57,76p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 7 | 10 | 9 | 12 | 19 | 22 |
| 15 | P | 0,15 | 0,2 | 0,3p | 0,4p | 0,12 | 0,16 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 3 | 12 | 4 | 16 | 9 | 36 |
| 15 | P | 0,15 | 0,2 | 0,3p | 0,4p | 0,12 | 0,16 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,3.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,525; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. -0,52 < X < 0,52  
  
20. a) A = ± 0,5774; б) A = 0,5774  
  
21. 0,1587

Вариант - 9  
1. а) 1/90; б) 7/30.  
  
2. a) (C(12, 4) + C(12, 8)/C(16, 8)); б) C(4, 2)C(12, 6) + C(4, 3)C(12, 5) + C(4, 4)C(12, 4)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,76; б) 0,24; в) 0,36  
  
5. 0,8821.  
  
6. 0,0047  
  
7. 0,3667  
  
8. 0,3271.  
  
9. 0,9969.  
  
10. a)0,0865; b) 0,6026  
  
11. 0,6879  
  
12. M(X) = 2,3056, D(X) = 1,9626, σ(X) = 1,4009.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,4 | 0,24 | 0,144 | 0,0864 | 0,1296 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. M(X) = 3.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (3^0)/0! \* e^-3 | (3^1)/1! \* e^-3 | ... | (3^n)/n! \* e^-3 | ... |

15. а) M(X) = 2,4 + 4p; D(X) = 8,64 -3,200000000000001p - 16p^2; M(Y) = 1,6; D(Y) = 1,24;
в) M(Z1) = 6,4 + 8p; D(Z1) = 35,8 -12,8p - 64p^2; M(Z2) = 3,84 + 6,4p; D(Z2) = 39,9744 + 11,648p - 40,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 6 | 7 | 10 | 11 | 18 | 19 |
| 15 | P | 0,2 | 0,08 | 0,5p | 0,2p | 0,1 | 0,04 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 4 | 6 | 8 | 12 | 16 | 24 |
| 15 | P | 0,2 | 0,08 | 0,5p | 0,2p | 0,1 | 0,04 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,1111  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,7; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 3,7 < X < 4,3.  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,0378.

Вариант - 10  
1. a) 1/66; b) 1/9979200.  
  
2. a) (C(11, 3) + C(11, 8)/C(16, 8)); б) C(5, 3)C(11, 5) + C(5, 4)C(11, 4) + C(5, 5)C(11, 3)/C(16, 8)  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,28  
  
6. 0,9275.  
  
7. 0,46.  
  
8. 0,36.  
  
9. 0,0001  
  
10. a)0,0843; b) 0,6368  
  
11. 0,2372.  
  
12. MX = 3,5; DX = 2,9167; σ(X) = 1,7078

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | P | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 |

13. M(X) = 1,2; D(X) = 0,84.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,24010 | 0,41160 | 0,26460 | 0,07560 | 0,00810 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 1,7 + 6p; D(X) = 7,21 + 15,599999999999998p - 36p^2; M(Y) = 1,4; D(Y) = 1,84;
в) M(Z1) = 4,8 + 12p; D(Z1) = 30,68 + 62,4p - 144p^2; M(Z2) = 2,38 + 8,4p; D(Z2) = 32,7156 + 96,816p - 70,56p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 5 | 13 | 15 | 15 | 17 |
| 15 | P | 0,06 | 0,12 | 0,2p | 0,4p | 0,04 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 3 | 6 | 18 | 7 | 21 |
| 15 | P | 0,06 | 0,12 | 0,2p | 0,4p | 0,04 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,0889  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5638; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 9,584 < X < 10,416  
  
20. а) 0,000386; б) 0,0003264; в) 0,00027596.  
  
21. 0,496

Вариант - 11  
1. а) 1/156; б) 7/52.  
  
2. a) (C(12, 4) + C(12, 8)/C(16, 8)); б) C(4, 3)C(12, 5) + C(4, 4)C(12, 4)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. а) 0,05; б) 0,45 в) 0,45.  
  
5. 0,4234.  
  
6. 0,875.  
  
7. 0,4118.  
  
8. 0,555  
  
9. 0  
  
10. a)0,0912; b) 0,6915  
  
11. 0,1538.  
  
12. MX = 3; DX = 2; σ(X) = 1,4142

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

13. MX = 3; DX = 1,2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,01020 | 0,07680 | 0,23040 | 0,34560 | 0,25920 | 0,07780 |

14. M(X) = 2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (2^0)/0! \* e^-2 | (2^1)/1! \* e^-2 | ... | (2^n)/n! \* e^-2 | ... |

15. а) M(X) = 3,2 + 5p; D(X) = 10,16 -7,0000000000000036p - 25p^2; M(Y) = 1,2; D(Y) = 1,76;
в) M(Z1) = 7,6 + 10p; D(Z1) = 42,4 -28p - 100p^2; M(Z2) = 3,84 + 6p; D(Z2) = 50,5344 + 33,92p - 36p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 6 | 8 | 12 | 14 | 16 | 18 |
| 15 | P | 0,08 | 0,02 | 0,4p | 0,1p | 0,16 | 0,04 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 4 | 8 | 10 | 20 | 14 | 28 |
| 15 | P | 0,08 | 0,02 | 0,4p | 0,1p | 0,16 | 0,04 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,3.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,725; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 4,1 < X < 5,9.  
  
20. а) 0,000386; б) 0,0003404; в) 0,00027596.  
  
21. 0,3195.

Вариант - 12  
1. a) 1/66; b) 1/1995840.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,88; б) 0,12; в) 0,28  
  
5. 0,5797.  
  
6. 0,0323  
  
7. 0,3  
  
8. 0,283.  
  
9. 0,0085  
  
10. а) 0,000856475877534871; б) 0,9939.  
  
11. 0,1994.  
  
12. M(X) = 2,7731, D(X) = 2,4218, σ(X) = 1,5562.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,3 | 0,21 | 0,147 | 0,1029 | 0,2401 |

13. MX = 4,8; DX = 0,96

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 13 | P | 0,00010 | 0,00150 | 0,01540 | 0,08190 | 0,24580 | 0,39320 | 0,26210 |

14. M(X) = 9.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (9^0)/0! \* e^-9 | (9^1)/1! \* e^-9 | ... | (9^n)/n! \* e^-9 | ... |

15. а) M(X) = 1 + 4p; D(X) = 5,6 + 8p - 16p^2; M(Y) = 1,3; D(Y) = 3,21;
в) M(Z1) = 3,3 + 8p; D(Z1) = 25,61 + 32p - 64p^2; M(Z2) = 1,3 + 5,2p; D(Z2) = 30,65 + 64,88p - 27,04p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 6 | 9 | 12 | 17 | 20 |
| 15 | P | 0,02 | 0,06 | 0,1p | 0,3p | 0,01 | 0,03 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 4 | 4 | 16 | 8 | 32 |
| 15 | P | 0,02 | 0,06 | 0,1p | 0,3p | 0,01 | 0,03 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3333  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,6; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 6,1 < X < 7,9.  
  
20. а) 0,000370; б) 0,0003550; в) 0,00027596.  
  
21. 0,1359.

Вариант - 13  
1. а) 1/156; б) 5/52.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,84; б) 0,16; в) 0,24  
  
5. 0,2813.  
  
6. 0,0366  
  
7. 0,4.  
  
8. 0,6143  
  
9. 0,9996.  
  
10. а) 0,023899329292690067; б) 0,496.  
  
11. 0,1994.  
  
12. M(X) = 4,0951, D(X) = 1,9881, σ(X) = 1,41.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,1 | 0,09 | 0,081 | 0,0729 | 0,6561 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 2,9 + 4p; D(X) = 7,89 -7,200000000000001p - 16p^2; M(Y) = 1,6; D(Y) = 1,44;
в) M(Z1) = 7,4 + 8p; D(Z1) = 33 -28,8p - 64p^2; M(Z2) = 4,64 + 6,4p; D(Z2) = 43,6704 + 4,608p - 40,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 15 | 17 |
| 15 | P | 0,16 | 0,16 | 0,4p | 0,4p | 0,12 | 0,12 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 7 | 21 |
| 15 | P | 0,16 | 0,16 | 0,4p | 0,4p | 0,12 | 0,12 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,1556  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5087; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 19,376 < X < 20,624  
  
20. а) 0,000370; б) 0,0003404; в) 0,00027596.  
  
21. 0,8413

Вариант - 14  
1. a) 1/66; b) 1/9979200.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,28  
  
6. 0,0119  
  
7. 0,3  
  
8. 0,4038.  
  
9. 0,9987.  
  
10. а) 0,007267222761422275; б) 0,8159.  
  
11. 0,2221.  
  
12. M(X) = 2,7731, D(X) = 2,4218, σ(X) = 1,5562.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,3 | 0,21 | 0,147 | 0,1029 | 0,2401 |

13. MX = 4; DX = 0,8

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,00030 | 0,00640 | 0,05120 | 0,20480 | 0,40960 | 0,32770 |

14. M(X) = 2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (2^0)/0! \* e^-2 | (2^1)/1! \* e^-2 | ... | (2^n)/n! \* e^-2 | ... |

15. а) M(X) = 3,8 + 4p; D(X) = 7,16 -14,400000000000002p - 16p^2; M(Y) = 1,1; D(Y) = 1,69;
в) M(Z1) = 8,7 + 8p; D(Z1) = 30,33 -57,6p - 64p^2; M(Z2) = 4,18 + 4,4p; D(Z2) = 45,1676 + 9,616p - 19,36p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 15 | 17 |
| 15 | P | 0,1 | 0,15 | 0,2p | 0,3p | 0,08 | 0,12 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 7 | 21 |
| 15 | P | 0,1 | 0,15 | 0,2p | 0,3p | 0,08 | 0,12 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3111  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,4388; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 9,4 < X < 10,6.  
  
20. а) 0,000403; б) 0,0003550; в) 0,00028780.  
  
21. 0,0214.

Вариант - 15  
1. a) 1/45; b) 1/302400.  
  
2. a) (C(10, 2) + C(10, 8)/C(16, 8)); б) C(6, 3)C(10, 5) + C(6, 4)C(10, 4) + C(6, 5)C(10, 3) + C(6, 6)C(10, 2)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. а) 0,09; б) 0,21 в) 0,49.  
  
5. 0,375  
  
6. 0,0798  
  
7. 0,3333  
  
8. 0,3559.  
  
9. 0,9969.  
  
10. a)0,0957; b) 0,6517  
  
11. 0,1994.  
  
12. MX = 3; DX = 2; σ(X) = 1,4142

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |

13. MX = 4,2; DX = 1,26

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 13 | P | 0,00070 | 0,01020 | 0,05950 | 0,18520 | 0,32410 | 0,30250 | 0,11760 |

14. M(X) = 4.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (4^0)/0! \* e^-4 | (4^1)/1! \* e^-4 | ... | (4^n)/n! \* e^-4 | ... |

15. а) M(X) = 3,4 + 4p; D(X) = 9,84 -11,200000000000003p - 16p^2; M(Y) = 1,2; D(Y) = 2,16;
в) M(Z1) = 8 + 8p; D(Z1) = 41,52 -44,8p - 64p^2; M(Z2) = 4,08 + 4,8p; D(Z2) = 60,3936 + 18,432p - 23,04p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 7 | 10 | 9 | 12 | 15 | 18 |
| 15 | P | 0,08 | 0,04 | 0,4p | 0,2p | 0,16 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 3 | 12 | 4 | 16 | 7 | 28 |
| 15 | P | 0,08 | 0,04 | 0,4p | 0,2p | 0,16 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,1333  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,575; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. -0,416 < X < 0,416  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,1587

Вариант - 16  
1. а) 1/156; б) 5/78.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,304  
  
6. 0,8609.  
  
7. 0,4222.  
  
8. 0,6043  
  
9. 0,9987.  
  
10. a)0,07; b) 0,7291  
  
11. 0,4648  
  
12. M(X) = 3,3616, D(X) = 2,57, σ(X) = 1,6031.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,16 | 0,128 | 0,1024 | 0,4096 |

13. MX = 3,5; DX = 1,05

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,00240 | 0,02840 | 0,13230 | 0,30870 | 0,36010 | 0,16810 |

14. M(X) = 9.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (9^0)/0! \* e^-9 | (9^1)/1! \* e^-9 | ... | (9^n)/n! \* e^-9 | ... |

15. а) M(X) = 2,7 + 6p; D(X) = 9,21 + 3,5999999999999943p - 36p^2; M(Y) = 2; D(Y) = 2,4;
в) M(Z1) = 7,4 + 12p; D(Z1) = 39,24 + 14,4p - 144p^2; M(Z2) = 5,4 + 12p; D(Z2) = 76,44 + 100,8p - 144p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 8 | 10 | 14 | 16 | 16 | 18 |
| 15 | P | 0,08 | 0,06 | 0,4p | 0,3p | 0,12 | 0,09 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 6 | 12 | 12 | 24 | 14 | 28 |
| 15 | P | 0,08 | 0,06 | 0,4p | 0,3p | 0,12 | 0,09 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,6.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 6,1 < X < 7,9.  
  
20. а) 0,000370; б) 0,0003550; в) 0,00028780.  
  
21. 0,1613.

Вариант - 17  
1. а) 1/110; б) 1/11.  
  
2. a) (C(12, 4) + C(12, 8)/C(16, 8)); б) C(4, 2)C(12, 6) + C(4, 3)C(12, 5) + C(4, 4)C(12, 4)/C(16, 8)  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. а) 0,04; б) 0,36 в) 0,54.  
  
5. 0,174  
  
6. 0,0462  
  
7. 0,3333  
  
8. 0,65  
  
9. 0,9987.  
  
10. a)0,101; b) 0,5832  
  
11. 0,1764.  
  
12. M(X) = 4,0951, D(X) = 1,9881, σ(X) = 1,41.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,1 | 0,09 | 0,081 | 0,0729 | 0,6561 |

13. MX = 3; DX = 1,2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,01020 | 0,07680 | 0,23040 | 0,34560 | 0,25920 | 0,07780 |

14. M(X) = 6.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (6^0)/0! \* e^-6 | (6^1)/1! \* e^-6 | ... | (6^n)/n! \* e^-6 | ... |

15. а) M(X) = 2,2 + 5p; D(X) = 9,16 + 3p - 25p^2; M(Y) = 0,8; D(Y) = 1,76;
в) M(Z1) = 5,2 + 10p; D(Z1) = 38,4 + 12p - 100p^2; M(Z2) = 1,76 + 4p; D(Z2) = 30,5024 + 45,92p - 16p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 6 | 8 | 12 | 14 | 18 | 20 |
| 15 | P | 0,06 | 0,03 | 0,2p | 0,1p | 0,04 | 0,02 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 4 | 8 | 10 | 20 | 16 | 32 |
| 15 | P | 0,06 | 0,03 | 0,2p | 0,1p | 0,04 | 0,02 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,4.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,625; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 19,488 < X < 20,512  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,496

Вариант - 18  
1. a) 1/66; b) 1/1995840.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,7373.  
  
6. 0,01  
  
7. 0,3.  
  
8. 0,4495.  
  
9. 0,9987.  
  
10. a)0,0868; b) 0,67  
  
11. 0,6832  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. MX = 3,2; DX = 0,64

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00160 | 0,02560 | 0,15360 | 0,40960 | 0,40960 |

14. MX = 30

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (30^0)/0! \* e^-30 | (30^1)/1! \* e^-30 | ... | (30^n)/n! \* e^-30 | ... |

15. а) M(X) = 2,9 + 4p; D(X) = 5,89 -7,200000000000001p - 16p^2; M(Y) = 2; D(Y) = 2,8;
в) M(Z1) = 7,8 + 8p; D(Z1) = 26,36 -28,8p - 64p^2; M(Z2) = 5,8 + 8p; D(Z2) = 63,6 + 16p - 64p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 7 | 10 | 9 | 12 | 15 | 18 |
| 15 | P | 0,2 | 0,2 | 0,4p | 0,4p | 0,08 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 3 | 12 | 4 | 16 | 7 | 28 |
| 15 | P | 0,2 | 0,2 | 0,4p | 0,4p | 0,08 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,1111  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,4388; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 11,5 < X < 14,5.  
  
20. a) A = ± 0,4472; б) A = 0,4472  
  
21. 0,0666.

Вариант - 19  
1. a) 1/66; b) 1/1995840.  
  
2. a) (C(10, 2) + C(10, 8)/C(16, 8)); б) C(6, 2)C(10, 6) + C(6, 3)C(10, 5) + C(6, 4)C(10, 4) + C(6, 5)C(10, 3) + C(6, 6)C(10, 2)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,0036.  
  
6. 0,8235.  
  
7. 0,3.  
  
8. 0,3333.  
  
9. 0,0038  
  
10. a)0,0916; b) 0,6141  
  
11. 0,8473  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. M(X) = 0,8; D(X) = 0,64.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,40960 | 0,40960 | 0,15360 | 0,02560 | 0,00160 |

14. M(X) = 9.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (9^0)/0! \* e^-9 | (9^1)/1! \* e^-9 | ... | (9^n)/n! \* e^-9 | ... |

15. а) M(X) = 3,8 + 5p; D(X) = 18,16 -13p - 25p^2; M(Y) = 1,5; D(Y) = 2,85;
в) M(Z1) = 9,1 + 10p; D(Z1) = 75,49 -52p - 100p^2; M(Z2) = 5,7 + 7,5p; D(Z2) = 133,77 + 42p - 56,25p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 6 | 11 | 14 | 19 | 22 |
| 15 | P | 0,06 | 0,06 | 0,3p | 0,3p | 0,12 | 0,12 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 4 | 5 | 20 | 9 | 36 |
| 15 | P | 0,06 | 0,06 | 0,3p | 0,3p | 0,12 | 0,12 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2667  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,6; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 19,48 < X < 20,52  
  
20. а) 0,000386; б) 0,0003550; в) 0,00027596.  
  
21. 0,3085

Вариант - 20  
1. а) 1/110; б) 21/110.  
  
2. a) (C(9, 1) + C(9, 8)/C(16, 8)); б) C(7, 1)C(9, 7) + C(7, 2)C(9, 6) + C(7, 3)C(9, 5) + C(7, 4)C(9, 4) + C(7, 5)C(9, 3) + C(7, 6)C(9, 2) + C(7, 7)C(9, 1)/C(16, 8)  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. а) 0,03; б) 0,27 в) 0,63.  
  
5. 0,304  
  
6. 0,0598  
  
7. 0,3  
  
8. 0,4242.  
  
9. 0,9969.  
  
10. a)0,0812; b) 0,7191  
  
11. 0,4648  
  
12. MX = 3,5; DX = 2,9167; σ(X) = 1,7078

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | P | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 |

13. M(X) = 0,6; D(X) = 0,48.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 |
| 13 | P | 0,51200 | 0,38400 | 0,09600 | 0,00800 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 3,2 + 5p; D(X) = 10,16 -7,0000000000000036p - 25p^2; M(Y) = 1,2; D(Y) = 2,56;
в) M(Z1) = 7,6 + 10p; D(Z1) = 43,2 -28p - 100p^2; M(Z2) = 3,84 + 6p; D(Z2) = 66,8544 + 53,92p - 36p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 6 | 8 | 12 | 14 | 16 | 18 |
| 15 | P | 0,04 | 0,04 | 0,2p | 0,2p | 0,08 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 4 | 8 | 10 | 20 | 14 | 28 |
| 15 | P | 0,04 | 0,04 | 0,2p | 0,2p | 0,08 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2889  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,6; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. -0,512 < X < 0,512  
  
20. a) A = ± 0,5; б) A = 0,5  
  
21. 0,1587

Вариант - 21  
1. а) 1/110; б) 21/110.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,84; б) 0,16; в) 0,24  
  
5. 0,304  
  
6. 0,0366  
  
7. 0,5278.  
  
8. 0,6  
  
9. 0,0052  
  
10. a)0,0892; b) 0,6443  
  
11. 0,8473  
  
12. MX = 3,5; DX = 2,9167; σ(X) = 1,7078

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | P | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 |

13. M(X) = 1,2; D(X) = 0,84.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,24010 | 0,41160 | 0,26460 | 0,07560 | 0,00810 |

14. M(X) = 4.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (4^0)/0! \* e^-4 | (4^1)/1! \* e^-4 | ... | (4^n)/n! \* e^-4 | ... |

15. а) M(X) = 1,9 + 6p; D(X) = 6,69 + 13,2p - 36p^2; M(Y) = 1,4; D(Y) = 2,04;
в) M(Z1) = 5,2 + 12p; D(Z1) = 28,8 + 52,8p - 144p^2; M(Z2) = 2,66 + 8,4p; D(Z2) = 34,1244 + 99,312p - 70,56p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 4 | 5 | 14 | 15 | 16 | 17 |
| 15 | P | 0,05 | 0,2 | 0,1p | 0,4p | 0,02 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 3 | 12 | 18 | 14 | 21 |
| 15 | P | 0,05 | 0,2 | 0,1p | 0,4p | 0,02 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2222  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,625; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 6,8 < X < 9,2.  
  
20. a) A = ± 0,5774; б) A = 0,5774  
  
21. 0,1587

Вариант - 22  
1. а) 1/132; б) 5/44.  
  
2. a) (C(9, 1) + C(9, 8)/C(16, 8)); б) C(7, 2)C(9, 6) + C(7, 3)C(9, 5) + C(7, 4)C(9, 4) + C(7, 5)C(9, 3) + C(7, 6)C(9, 2) + C(7, 7)C(9, 1)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,4234.  
  
6. 0,0107  
  
7. 0,475.  
  
8. 0,3182.  
  
9. 0,0023  
  
10. a)0,0716; b) 0,7191  
  
11. 0,1007.  
  
12. M(X) = 3,3616, D(X) = 2,57, σ(X) = 1,6031.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,16 | 0,128 | 0,1024 | 0,4096 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. MX = 30

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (30^0)/0! \* e^-30 | (30^1)/1! \* e^-30 | ... | (30^n)/n! \* e^-30 | ... |

15. а) M(X) = 1,9 + 4p; D(X) = 6,49 + 0,7999999999999998p - 16p^2; M(Y) = 0,8; D(Y) = 1,36;
в) M(Z1) = 4,6 + 8p; D(Z1) = 27,32 + 3,2p - 64p^2; M(Z2) = 1,52 + 3,2p; D(Z2) = 17,8896 + 22,272p - 10,24p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 19 | 21 |
| 15 | P | 0,1 | 0,1 | 0,2p | 0,2p | 0,02 | 0,02 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 9 | 27 |
| 15 | P | 0,1 | 0,1 | 0,2p | 0,2p | 0,02 | 0,02 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,4.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,7; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 9,36 < X < 10,64  
  
20. a) A = ± 0,4472; б) A = 0,4472  
  
21. 0,0674.

Вариант - 23  
1. а) 1/90; б) 1/9.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,85; б) 0,15; в) 0,35  
  
5. 0,28  
  
6. 0,8669.  
  
7. 0,4333.  
  
8. 0,3535.  
  
9. 0,9969.  
  
10. а) 0,007267222761422275; б) 0,496.  
  
11. 0,4648  
  
12. MX = 3,5; DX = 2,9167; σ(X) = 1,7078

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | P | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 | 0,1667 |

13. M(X) = 1,5; D(X) = 1,05.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,16807 | 0,36015 | 0,30870 | 0,13230 | 0,02835 | 0,00243 |

14. M(X) = 3.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (3^0)/0! \* e^-3 | (3^1)/1! \* e^-3 | ... | (3^n)/n! \* e^-3 | ... |

15. а) M(X) = 3,1 + 5p; D(X) = 15,09 -5,9999999999999964p - 25p^2; M(Y) = 1; D(Y) = 1,8;
в) M(Z1) = 7,2 + 10p; D(Z1) = 62,16 -24p - 100p^2; M(Z2) = 3,1 + 5p; D(Z2) = 59,55 + 39p - 25p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 4 | 6 | 12 | 14 | 20 | 22 |
| 15 | P | 0,12 | 0,04 | 0,3p | 0,1p | 0,09 | 0,03 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 4 | 10 | 20 | 18 | 36 |
| 15 | P | 0,12 | 0,04 | 0,3p | 0,1p | 0,09 | 0,03 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,4.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5363; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 9,344 < X < 10,656  
  
20. а) 0,000386; б) 0,0003404; в) 0,00028780.  
  
21. 0,0167.

Вариант - 24  
1. a) 1/55; b) 1/3326400.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,82; б) 0,18; в) 0,42  
  
5. 0,4  
  
6. 0,0173  
  
7. 0,4688.  
  
8. 0,4298.  
  
9. 0,0003  
  
10. а) 0,000856475877534871; б) 0,9633.  
  
11. 0,0943.  
  
12. M(X) = 3,3616, D(X) = 2,57, σ(X) = 1,6031.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,2 | 0,16 | 0,128 | 0,1024 | 0,4096 |

13. MX = 3,5; DX = 1,05

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 | 5 |
| 13 | P | 0,00240 | 0,02840 | 0,13230 | 0,30870 | 0,36010 | 0,16810 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 2,2 + 4p; D(X) = 9,96 -1,6000000000000014p - 16p^2; M(Y) = 0,5; D(Y) = 1,45;
в) M(Z1) = 4,9 + 8p; D(Z1) = 41,29 -6,4p - 64p^2; M(Z2) = 1,1 + 2p; D(Z2) = 23,95 + 22,8p - 4p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 6 | 9 | 12 | 15 | 18 |
| 15 | P | 0,01 | 0,01 | 0,1p | 0,1p | 0,03 | 0,03 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 4 | 4 | 16 | 7 | 28 |
| 15 | P | 0,01 | 0,01 | 0,1p | 0,1p | 0,03 | 0,03 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2889  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,575; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 5,4 < X < 6,6.  
  
20. а) 0,000403; б) 0,0003264; в) 0,00027596.  
  
21. 0,3085

Вариант - 25  
1. a) 1/55; b) 1/831600.  
  
2. a) (C(11, 3) + C(11, 8)/C(16, 8)); б) C(5, 2)C(11, 6) + C(5, 3)C(11, 5) + C(5, 4)C(11, 4) + C(5, 5)C(11, 3)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,88; б) 0,12; в) 0,28  
  
5. 0,35  
  
6. 0,8609.  
  
7. 0,3333  
  
8. 0,283.  
  
9. 0,0003  
  
10. а) 0,007267222761422275; б) 0,496.  
  
11. 0,4648  
  
12. M(X) = 2,7731, D(X) = 2,4218, σ(X) = 1,5562.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,3 | 0,21 | 0,147 | 0,1029 | 0,2401 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 3,1 + 4p; D(X) = 15,49 -8,799999999999997p - 16p^2; M(Y) = 1,6; D(Y) = 1,44;
в) M(Z1) = 7,8 + 8p; D(Z1) = 63,4 -35,2p - 64p^2; M(Z2) = 4,96 + 6,4p; D(Z2) = 75,7984 + 0,512p - 40,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 19 | 21 |
| 15 | P | 0,08 | 0,08 | 0,4p | 0,4p | 0,12 | 0,12 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 9 | 27 |
| 15 | P | 0,08 | 0,08 | 0,4p | 0,4p | 0,12 | 0,12 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3778  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,75; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 9,5 < X < 12,5.  
  
20. а) 0,000386; б) 0,0003264; в) 0,00027596.  
  
21. 0,1359.

Вариант - 26  
1. a) 1/55; b) 1/831600.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. а) 0,05; б) 0,45 в) 0,45.  
  
5. 0,4234.  
  
6. 0,9358.  
  
7. 0,38.  
  
8. 0,6286  
  
9. 0,9987.  
  
10. а) 0,00000000000742575; б) 0,504.  
  
11. 0,4648  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. MX = 40

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (40^0)/0! \* e^-40 | (40^1)/1! \* e^-40 | ... | (40^n)/n! \* e^-40 | ... |

15. а) M(X) = 1,9 + 5p; D(X) = 6,69 + 5,999999999999998p - 25p^2; M(Y) = 2; D(Y) = 3,2;
в) M(Z1) = 5,8 + 10p; D(Z1) = 29,96 + 24p - 100p^2; M(Z2) = 3,8 + 10p; D(Z2) = 59,72 + 104p - 100p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 4 | 6 | 12 | 14 | 16 | 18 |
| 15 | P | 0,1 | 0,2 | 0,2p | 0,4p | 0,04 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 4 | 10 | 20 | 14 | 28 |
| 15 | P | 0,1 | 0,2 | 0,2p | 0,4p | 0,04 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3111  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,525; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 9,232 < X < 10,768  
  
20. a) A = ± 0,5; б) A = 0,5  
  
21. 0,496

Вариант - 27  
1. а) 1/132; б) 5/44.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,76; б) 0,24; в) 0,36  
  
5. 0,35  
  
6. 0,8959.  
  
7. 0,3333  
  
8. 0,2083.  
  
9. 0,0023  
  
10. а) 0,000999247504140276; б) 0,8159.  
  
11. 0,6879  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. M(X) = 6.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (6^0)/0! \* e^-6 | (6^1)/1! \* e^-6 | ... | (6^n)/n! \* e^-6 | ... |

15. а) M(X) = 2,4 + 6p; D(X) = 11,64 + 7,199999999999999p - 36p^2; M(Y) = 1,2; D(Y) = 2,56;
в) M(Z1) = 6 + 12p; D(Z1) = 49,12 + 28,8p - 144p^2; M(Z2) = 2,88 + 7,2p; D(Z2) = 61,3056 + 102,528p - 51,84p^2.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 6 | 8 | 14 | 16 | 20 | 22 |
| 15 | P | 0,06 | 0,06 | 0,2p | 0,2p | 0,04 | 0,04 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 4 | 8 | 12 | 24 | 18 | 36 |
| 15 | P | 0,06 | 0,06 | 0,2p | 0,2p | 0,04 | 0,04 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,2.  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) Выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -1; x/2, при -1 < x ⩽ 0; x/2 - x^2/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) 0,7; 3) MX = 1/12, DX = 1/2, σ(Х) = 0,707  
  
19. 9,232 < X < 10,768  
  
20. а) 0,000403; б) 0,0003264; в) 0,00028780.  
  
21. 0,1587

Вариант - 28  
1. а) 1/132; б) 7/44.  
  
2. а) 2/3; б) 8/9.  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,84; б) 0,16; в) 0,24  
  
5. 0,078.  
  
6. 0,8523.  
  
7. 0,3667  
  
8. 0,6  
  
9. 0,9969.  
  
10. a)0,0794; b) 0,6368  
  
11. 0,4648  
  
12. MX = 2,5; DX = 1,25; σ(X) = 1,118

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| № | X | 1 | 2 | 3 | 4 |
| 12 | P | 0,25 | 0,25 | 0,25 | 0,25 |

13. M(X) = 1,2; D(X) = 0,72.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 |
| 13 | P | 0,21600 | 0,43200 | 0,28800 | 0,06400 |

14. M(X) = 4.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (4^0)/0! \* e^-4 | (4^1)/1! \* e^-4 | ... | (4^n)/n! \* e^-4 | ... |

15. а) M(X) = 2 + 4p; D(X) = 9,6 + 0p - 16p^2; M(Y) = 1,6; D(Y) = 1,44;
в) M(Z1) = 5,6 + 8p; D(Z1) = 39,84 + 0p - 64p^2; M(Z2) = 3,2 + 6,4p; D(Z2) = 44,16 + 23,04p - 40,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 9 | 11 | 17 | 19 |
| 15 | P | 0,08 | 0,08 | 0,4p | 0,4p | 0,08 | 0,08 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 4 | 12 | 8 | 24 |
| 15 | P | 0,08 | 0,08 | 0,4p | 0,4p | 0,08 | 0,08 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,3333  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,5363; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. 11,7 < X < 12,3.  
  
20. а) 0,000386; б) 0,0003264; в) 0,00027596.  
  
21. 0,0441.

Вариант - 29  
1. а) 1/90; б) 1/9.  
  
2. a) (C(11, 3) + C(11, 8)/C(16, 8)); б) C(5, 3)C(11, 5) + C(5, 4)C(11, 4) + C(5, 5)C(11, 3)/C(16, 8)  
  
3. A = {1, 3, 5}; B = {1, 2, 4, 5, 6}; C = {1, 2, 3, 4, 6}
а) {1}; б) {1, 2, 3, 4, 5, 6}; в) {2, 4, 6}.  
  
4. a) 0,8; б) 0,2; в) 0,3  
  
5. 0,1638.  
  
6. 0,1385  
  
7. 0,4313.  
  
8. 0,54  
  
9. 0,9942.  
  
10. а) 0,024182907803422995; б) 0,025.  
  
11. 0,8473  
  
12. M(X) = 2,7731, D(X) = 2,4218, σ(X) = 1,5562.

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| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,3 | 0,21 | 0,147 | 0,1029 | 0,2401 |

13. MX = 2,8; DX = 0,84

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 | 4 |
| 13 | P | 0,00810 | 0,07560 | 0,26460 | 0,41160 | 0,24010 |

14. MX = 30

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (30^0)/0! \* e^-30 | (30^1)/1! \* e^-30 | ... | (30^n)/n! \* e^-30 | ... |

15. а) M(X) = 4,5 + 6p; D(X) = 6,25 -18p - 36p^2; M(Y) = 1,2; D(Y) = 1,56;
в) M(Z1) = 10,2 + 12p; D(Z1) = 26,56 -72p - 144p^2; M(Z2) = 5,4 + 7,2p; D(Z2) = 50,34 + 30,24p - 51,84p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 5 | 7 | 13 | 15 | 15 | 17 |
| 15 | P | 0,15 | 0,15 | 0,3p | 0,3p | 0,15 | 0,15 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 2 | 6 | 6 | 18 | 7 | 21 |
| 15 | P | 0,15 | 0,15 | 0,3p | 0,3p | 0,15 | 0,15 |

16. 1) {0, при x ⩽ 0; 2 \* x / 9, при 0 < x ⩽ 3; 0, при x > 3}; 2) MX = 2, DX = 4,5, σ(Х) = 2,1213; 3) 0,2444  
  
17. 1) 1/π; 2) F(x) = a \* arctg(x) + aπ/2; 3) Ассиметрия = 0, Эксцесс = 8/(aπ) - 3  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,3412; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. -0,64 < X < 0,64  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,0378.

Вариант - 30  
1. a) 1/45; b) 1/302400.  
  
2. а) 2/3; б) 8/9.  
  
3. A = (T1 ∧ T2 ∧ T3) ∧ (D1 ∧ D2 ∧ D3 ∧ D4) ∧ (R1 ∨ R2 ∨ R3 ∨ R4 ∨ R5)  
  
4. a) 0,88; б) 0,12; в) 0,28  
  
5. 0,2813.  
  
6. 0,9198.  
  
7. 0,3  
  
8. 0,7  
  
9. 0,0003  
  
10. a)0,0968; b) 0,6406  
  
11. 0,6879  
  
12. M(X) = 2,7731, D(X) = 2,4218, σ(X) = 1,5562.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 1 | 2 | 3 | 4 | 5 |
| 12 | P | 0,3 | 0,21 | 0,147 | 0,1029 | 0,2401 |

13. M(X) = 1,2; D(X) = 0,72.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | 2 | 3 |
| 13 | P | 0,21600 | 0,43200 | 0,28800 | 0,06400 |

14. M(X) = 4.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | X | 0 | 1 | ... | n | ... |
| 14 | P | (4^0)/0! \* e^-4 | (4^1)/1! \* e^-4 | ... | (4^n)/n! \* e^-4 | ... |

15. а) M(X) = 2,1 + 4p; D(X) = 8,89 -0,8000000000000007p - 16p^2; M(Y) = 0,9; D(Y) = 1,29;
в) M(Z1) = 5,1 + 8p; D(Z1) = 36,85 -3,2p - 64p^2; M(Z2) = 1,89 + 3,6p; D(Z2) = 24,3579 + 19,992p - 12,96p^2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z1 | 3 | 5 | 9 | 11 | 17 | 19 |
| 15 | P | 0,15 | 0,1 | 0,3p | 0,2p | 0,06 | 0,04 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Z2 | 1 | 3 | 4 | 12 | 8 | 24 |
| 15 | P | 0,15 | 0,1 | 0,3p | 0,2p | 0,06 | 0,04 |

16. 1) f(x) = 0, при x ⩽ 0; 1, при 0 < x ⩽ 1; 0, при x > 1}; 2) M(X) = 1/2, D(X) = 1/12, σ(Х) = 0,289; 3) Р(a < X < b) = 0,4.  
  
17. 1) 2/3; 2) F(x) = {0, при x < 1; (x^2 - 1)/3, при 1 ⩽ x ⩽ 2; 1, при x > 2}; 3) Ассиметрия: -0,01, эксцесс: 1,5.  
  
18. 1) выполняется при нормализующем множителе = 1; 2) F(x) = {0, при x ⩽ -2; ((x+2)^2)/8, при -2 < x ⩽ 0; 1 - ((x-2)^2)/8, при 0 < x ⩽ 2; 1, при x > 2}; 3) P = 0,4162; 4) M(X) = 0, D(X) = 0,67; σ(Х) = 0,82.  
  
19. -0,624 < X < 0,624  
  
20. a) A = ± 0,7071; б) A = 0,7071  
  
21. 0,0608.