

Yakuniy nazorat savollari

1. Egri chiziqli integral tushunchasini ta'riflang.
2. Yoy uzunligi bo'yicha olingan egri chiziqli integral nima?
3. Yoy uzunligi bo'yicha integralning geometrik va fizik ma'nosi.
4. Yoy uzunligi bo'yicha egri chiziqli integralni hisoblash formulasi.
5. Egri chiziqli integralning asosiy xossalari.
6. Parametrik ko'rinishda berilgan egri chiziq uchun integral qanday hisoblanadi?
7. Egri chiziqli integralning yo'nalishga bog'liqligi nimani anglatadi?
8. Koordinatalar bo'yicha olingan egri chiziqli integral ta'rifi.
9. Tekis kuch maydonining bajargan ishi qanday aniqlanadi?
10. Koordinatalar bo'yicha egri chiziqli integralning fizik ma'nosi.
11. Egri chiziqli integralni hisoblashning asosiy usullari.
12. Potensial maydon tushunchasi.
13. Egri chiziqli integralning yo'ldan bog'liq bo'lmaslik sharti.
14. Yopiq egri chiziq bo'yicha integral nimani bildiradi?
15. Grin formulasi ta'rifi.
16. Grin formulasining matematik ifodasi.
17. Grin formulasini qo'llash shartlari.
18. Egri chiziqli integral yordamida yuzani hisoblash g'oyasi.
19. Differensial tenglama nima?
20. Differensial tenglamaning tartibi va darajasi nima?
21. Birinchi tartibli differensial tenglama ta'rifi.
22. Umumiy yechim va xususiy yechim tushunchalari.
23. O'zgaruvchilari ajraladigan differensial tenglama nima?
24. O'zgaruvchilari ajraladigan tenglamani yechish usuli.
25. Birinchi tartibli chiziqli differensial tenglama ta'rifi.
26. Birinchi tartibli chiziqli differensial tenglamaning umumiy ko'rinishi.
27. Integrallovchi ko'paytuvchi usulining mohiyati.

28. To'la differensial tenglama nima?
29. Differensial tenglamaning to'ralik sharti.
30. Koshi masalasi ta'rifi.
31. Boshlang'ich shartning ahamiyati nimada?
32. Yechimning mavjudligi va yagonaligi teoremlarining mazmuni.
33. Birinchi tartibli hosilaga nisbatan yechilmagan tenglama nima?
34. Klero differensial tenglamasi ta'rifi.
35. Lagrang differensial tenglamasi ta'rifi.
36. Yuqori tartibli differensial tenglama tushunchasi.
37. Yuqori tartibli differensial tenglamaning umumiy yechimi.
38. Tartibli pasayadigan differensial tenglama nima?
39. Tartibli pasayadigan tenglamalarni yechish g'oyasi.
40. n-tartibli chiziqli differensial tenglama ta'rifi.
41. Chiziqli differensial tenglamalarning asosiy xossalari.
42. Bir jinsli va bir jinsli bo'lmagan tenglamalar farqi.
43. O'zgarmas koeffitsientli chiziqli differensial tenglama nima?
44. Xarakteristik tenglama tushunchasi.
45. O'zgarmas koeffitsientli tenglamani yechish bosqichlari.
46. Karrali ildizlar holida yechim qanday yoziladi?
47. Kompleks ildizlar holida yechim qanday ko'rinishda bo'ladi?
48. Chiziqli differensial tenglamalar sistemasi nima?
49. Differensial tenglamalar sistemasining umumiy yechimi tushunchasi.
50. Differensial tenglamalarning amaliy masalalardagi qo'llanilishi.

Yoy uzunligi bo'yicha egri chiziqli integrallar

1. $y = x^2$, $0 \leq x \leq 1$ bo'yicha $\int_C (x + y) ds$ ni hisoblang.
2. $y = \sqrt{x}$, $0 \leq x \leq 4$ bo'yicha $\int_C y ds$ ni toping.
3. $y = x^3$, $0 \leq x \leq 1$ bo'yicha $\int_C x ds$.
4. $y = \ln x$, $1 \leq x \leq e$ bo'yicha $\int_C ds$.
5. $y = \sin x$, $0 \leq x \leq \pi$ bo'yicha $\int_C x ds$.
6. $y = \cos x$, $0 \leq x \leq \frac{\pi}{2}$ bo'yicha $\int_C y ds$.
7. $y = 2x$, $0 \leq x \leq 2$ bo'yicha $\int_C (x - y) ds$.
8. $y = x^2 + 1$, $0 \leq x \leq 1$ bo'yicha $\int_C y ds$.
9. $y = e^x$, $0 \leq x \leq 1$ bo'yicha $\int_C ds$.
10. $y = x^4$, $0 \leq x \leq 1$ bo'yicha $\int_C x^2 ds$

Parametrik egri chiziqlar

11. $x = t$, $y = t^2$, $0 \leq t \leq 1$ bo'yicha $\int_C y ds$.
12. $x = t^2$, $y = t^3$, $0 \leq t \leq 1$ bo'yicha $\int_C x ds$.
13. $x = \cos t$, $y = \sin t$, $0 \leq t \leq \pi$ bo'yicha $\int_C ds$.
14. $x = 2\cos t$, $y = 2\sin t$, $0 \leq t \leq 2\pi$ bo'yicha $\int_C ds$.
15. $x = t$, $y = \ln t$, $1 \leq t \leq e$ bo'yicha $\int_C y ds$.
16. $x = e^t$, $y = t$, $0 \leq t \leq 1$ bo'yicha $\int_C x ds$.
17. $x = t$, $y = \sin t$, $0 \leq t \leq \pi$ bo'yicha $\int_C ds$.
18. $x = t^2$, $y = \sqrt{t}$, $0 \leq t \leq 1$ bo'yicha $\int_C y ds$.
19. $x = \ln t$, $y = t$, $1 \leq t \leq e$ bo'yicha $\int_C x ds$.
20. $x = t$, $y = t^3$, $0 \leq t \leq 1$ bo'yicha $\int_C ds$.

Koordinatalar bo'yicha egri chiziqli integrallar

21. $\int_C (x dx + y dy)$, $C: y = x^2$, $0 \leq x \leq 1$.
22. $\int_C (y dx + x dy)$, $C: y = 2x$, $0 \leq x \leq 1$.

23. $\int_C (x^2 dx + y^2 dy)$, $C: y = x$.
24. $\int_C (2x dx + 3y dy)$, $C: y = x^2$.
25. $\int_C (y dx - x dy)$, $C: x^2 + y^2 = 1$.
26. $\int_C (x dx - y dy)$, $C: y = \sqrt{x}$.
27. $\int_C (xy dx + x dy)$, $C: y = x$.
28. $\int_C (x + y) dx$, $C: y = x^2$.
29. $\int_C (x dx + 2y dy)$, $C: y = 2x$.
30. $\int_C (y dx)$, $C: x = t, y = t^2$.

Yoy uzunligi bo'yicha egri chiziqli integrallar

31. $y = x^2 + 1$, $0 \leq x \leq 1$ bo'yicha $\int_C ds$ ni hisoblang.
32. $y = x^3 + 2$, $0 \leq x \leq 1$ bo'yicha $\int_C y ds$ ni toping.
33. $y = \sqrt{x} + 1$, $0 \leq x \leq 4$ bo'yicha $\int_C x ds$ ni toping.
34. $y = \ln x + 2$, $1 \leq x \leq e$ bo'yicha $\int_C ds$ ni hisoblang.
35. $y = e^x + 1$, $0 \leq x \leq 1$ bo'yicha $\int_C y ds$ ni toping.
36. $y = \sin x + 1$, $0 \leq x \leq \pi$ bo'yicha $\int_C x ds$.
37. $y = \cos x + 2$, $0 \leq x \leq \frac{\pi}{2}$ bo'yicha $\int_C y ds$.
38. $y = 3x$, $0 \leq x \leq 1$ bo'yicha $\int_C ds$.
39. $y = x^4 + 1$, $0 \leq x \leq 1$ bo'yicha $\int_C x^2 ds$.
40. $y = \ln(1 + x) + 1$, $0 \leq x \leq 1$ bo'yicha $\int_C ds$.

Parametrik egri chiziqlar

41. $x = t, y = t^2 + 1$, $0 \leq t \leq 1$ bo'yicha $\int_C y ds$.
42. $x = t^2, y = t^3 + 1$, $0 \leq t \leq 1$ bo'yicha $\int_C x ds$.
43. $x = \cos t, y = \sin t + 1$, $0 \leq t \leq \pi$ bo'yicha $\int_C ds$.
44. $x = 3\cos t, y = 3\sin t$, $0 \leq t \leq 2\pi$ bo'yicha yoy uzunligini toping.
45. $x = t, y = \ln t + 1$, $1 \leq t \leq e$ bo'yicha $\int_C y ds$.
46. $x = e^t, y = t + 1$, $0 \leq t \leq 1$ bo'yicha $\int_C x ds$.

$$47. x = t, y = \sin t + 2, 0 \leq t \leq \pi \text{ bo'yicha } \int_C ds.$$

$$48. x = t^2, y = \sqrt{t} + 1, 0 \leq t \leq 1 \text{ bo'yicha } \int_C y ds.$$

$$49. x = \ln t, y = t + 2, 1 \leq t \leq e \text{ bo'yicha } \int_C x ds.$$

$$50. x = t, y = t^3 + 1, 0 \leq t \leq 1 \text{ bo'yicha } \int_C ds.$$

Koordinatalar bo'yicha egri chiziqli integrallar

$$51. \int_C (x dx + y dy), C: y = x^2 + 1, 0 \leq x \leq 1.$$

$$52. \int_C (y dx + x dy), C: y = 2x + 1.$$

$$53. \int_C (x^2 dx + y^2 dy), C: y = x + 1.$$

$$54. \int_C (2x dx + 3y dy), C: y = x^2 + 1.$$

$$55. \int_C (y dx - x dy), C: x^2 + y^2 = 4.$$

$$56. \int_C (x dx - y dy), C: y = \sqrt{x} + 1.$$

$$57. \int_C (xy dx + x dy), C: y = x + 1.$$

$$58. \int_C (x + y) dx, C: y = x^2 + 1.$$

$$59. \int_C (x dx + 2y dy), C: y = 2x + 1.$$

$$60. \int_C y dx, C: x = t, y = t^2 + 1.$$

BIRINCHI TARTIBLI DIFFERENSIAL TENGLAMALAR

$$61. y' = xy \text{ tenglamani yeching.}$$

$$62. y' = \frac{x}{y} \text{ tenglamani yeching.}$$

$$63. y' = y \sin x \text{ tenglamani yeching.}$$

$$64. y' = x^2 y^2 \text{ tenglamani yeching.}$$

$$65. y' = \frac{1+y}{1+x} \text{ tenglamani yeching.}$$

$$66. y' + y = x \text{ tenglamani yeching.}$$

$$67. y' - 2y = e^x \text{ tenglamani yeching.}$$

$$68. y' + 3y = \sin x \text{ tenglamani yeching.}$$

$$69. y' - y = x^2 \text{ tenglamani yeching.}$$

$$70. y' + 2y = 0 \text{ tenglamani yeching.}$$

$$71. (2x + y) dx + (x + 2y) dy = 0.$$

72. $(y + e^x) dx + x dy = 0$.
73. $y' = x + y, y(0) = 1$.
74. $y' = y \cos x, y(0) = 2$.
75. $y' + y = x, y(0) = 0$.
76. $y = xy' + (y')^2$.
77. $y = xy' + e^{y'}$.
78. $y' = \tan x + y$.
79. $y' = \frac{y}{x} + x$.
80. $y' = \frac{x^2}{y}$.
81. $y' = xy$ tenglamani yeching.
82. $y' = \frac{x}{y}$ tenglamani yeching.
83. $y' = y \sin x$ tenglamani yeching.
84. $y' = x^2 y^2$ tenglamani yeching.
85. $y' = \frac{1+y}{1+x}$ tenglamani yeching.
86. $y' + y = x$ tenglamani yeching.
87. $y' - 2y = e^x$ tenglamani yeching.
88. $y' + 3y = \sin x$ tenglamani yeching.
89. $y' - y = x^2$ tenglamani yeching.
90. $y' + 2y = 0$ tenglamani yeching.
91. $(2x + y) dx + (x + 2y) dy = 0$ ni yeching.
92. $(y + e^x) dx + x dy = 0$ ni yeching.
93. $y' = x + y, y(0) = 1$ Koshi masalasini yeching.
94. $y' = y \cos x, y(0) = 2$.
95. $y' + y = x, y(0) = 0$.
96. $y = xy' + (y')^2$ Klero tenglamasini yeching.
97. $y = xy' + e^{y'}$ Lagrang tenglamasini yeching.
98. $y' = \tan x + y$ tenglamani yeching.
99. $y' = \frac{y}{x} + x$ tenglamani yeching.

100. $y' = \frac{x^2}{y}$ tenglamani yeching.
101. $y' = xy^2$ differensial tenglamani yeching.
102. $y' = \frac{x^2}{1+y^2}$ differensial tenglamani yeching.
103. $y' = y \cos x$ differensial tenglamani yeching.
104. $y' = \frac{1+y}{x}$ differensial tenglamani yeching.
105. $y' = \frac{y}{x} + x^2$ differensial tenglamani yeching.
106. $y' + y = x^2$ chiziqli differensial tenglamani yeching.
107. $y' - 3y = e^{2x}$ chiziqli differensial tenglamani yeching.
108. $y' + 2y = \sin x$ chiziqli differensial tenglamani yeching.
109. $(3x^2 + y) dx + (x - 2y) dy = 0$ to'la differensial tenglamani yeching yoki to'laligini tekshiring.
110. $y' = x + y, y(0) = 1$ Koshi masalasini yeching.

Yuqori tartibli differensial tenglamalar

111. $y'' = x$ tenglamani yeching.
112. $y'' = y'$ tenglamani yeching.
113. $y'' = (y')^2$ tenglamani yeching.
114. $y'' - y = 0$ tenglamani yeching.
115. $y'' + 4y = 0$ tenglamani yeching.
116. $y'' - 2y' + y = 0$ tenglamani yeching.
117. $y'' + 2y' + 5y = 0$ tenglamani yeching.
118. $y''' - y'' = 0$ tenglamani yeching.
119. $y'' - y = e^x$ tenglamani yeching.
120. $y'' + y = \sin x$ tenglamani yeching.
121. $y'' + 2y' + y = x$ tenglamani yeching.
122. $y'' - y' = x^2$ tenglamani yeching.
123. $y'' + y = 0, y(0) = 0, y'(0) = 1.$
124. $y'' - y = 0, y(0) = 1, y'(0) = 0.$
125. $y'' + 9y = 0$ tenglamani yeching.

- 126. $y'' + y' = 0$ tenglamani yeching.
- 127. Radioaktiv parchalanish modelini yeching.
- 128. Aholi o'sish tenglamasini yeching.
- 129. Nyuton sovish qonuni masalasini yeching.
- 130. Prugina tebranish tenglamasini yeching.