**Sun’iy intellekt ta’lim yo‘nalishi 1-kurs talabalariga <<Hisob (Calculus)>> fanidan namunaviy savollar**

| № | Savol |
|---|---|
| 1. | Haqiqiy son tushunchasi |
| 2. | Haqiqiy sonlar to‘plami va uning xossalari |
| 3. | Sonli to‘plamlarning chegaralari |
| 4. | Matematik induksiya usuli |
| 5. | Sonlar ketma-ketligi va uning limiti |
| 6. | Yaqinlashuvchi ketma-ketliklarning xossalari |
| 7. | Monoton ketma-ketliklarning limiti |
| 8. | Funksiya tushunchasi |
| 9. | Funksiyaning chegaralanganligi |
| 10. | Funksiyaning monotonligi |
| 11. | Funksiyaning juft va toqligi |
| 12. | Funksiyaning davriyligi |
| 13. | Teskari funksiya tushunchasi |
| 14. | Chiziqli va kvadrat funksiyalarning xossalari |
| 15. | Kasr ratsioanal funksiyalarning xossalari |
| 16. | Ko’rsatkichli funksiyaning xossalari |
| 17. | Logarifmik funksiyaning xossalari |
| 18. | y=cosx funksiyaning xossalari |
| 19. | y=sinx funksiyaning xossalari |
| 20. | y=tgx funksiyaning xossalari |
| 21. | y=ctgx funksiyaning xossalari |
| 22. | y=arccosx funksiyaning xossalari |
| 23. | y=arcsinx funksiyaning xossalari |
| 24. | y=arctgx funksiyaning xossalari |
| 25. | y=arcctgx funksiyaning xossalari |

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| 26. | Funksiya limitining Koshi ta’rifi |
| 27. | Funksiya limitining Geyne ta’rifi |
| 28. | Limitga ega bo‘lgan funksiyalarning tengsisliklarga bog’liq xossalari |
| 29. | Limitga ega bo‘lgan funksiyalarning xossalari |
| 30. | Funksiya limitining mavjudligi haqidagi Koshi teoremasi |
| 31. | Muhim limitlar |
| 32. | Cheksiz kichik funksiya tushunchasi |
| 33. | Cheksiz katta funksiya tushunchasi |
| 34. | Cheksiz kichik funksiyalarning xossalari |
| 35. | Cheksiz katta funksiyalarning xossalari |
| 36. | Uzluksiz funksiyalar ustida arifmetik amallar |
| 37. | Funksiyaning nuqtada uzilishi ta’rifi |
| 38. | Funksiyaning tuzatilishi mumkin bo’lgan uzilish nuqtasi ta’rifi |
| 39. | Funksiyaning 1-tur uzilish nuqtasi ta’rifi |
| 40. | Funksiyaning 2-tur uzilish nuqtasi ta’rifi |
| 41. | Uzluksiz funksiyalarning lokal xossalari |
| 42. | Uzluksiz funksiyalarning global xossalari (Veyershtrassning 1-teoremasi) |
| 43. | Uzluksiz funksiyalarning global xossalari (Bolsano-Koshining 1-teoremasi) |
| 44. | Uzluksiz funksiyalarning global xossalari (Veyershtrassning 2-teoremasi) |
| 45. | Uzluksiz funksiyalarning global xossalari (Bolsano-Koshining 2-teoremasi) |
| 46. | Kantor teoremasi |
| 47. | Funksiya hosilasining ta’rifi |
| 48. | Funksiya hosilasining geometrik ma’nosi |
| 49. | Funksiya hosilasining mexanik ma’nosi |
| 50. | Hosilani hisoblash qoidalari |
| 51. | Hosilani hisoblash formulalari |
| 52. | Funksiyaning differensiali tuhunchai |
| 53. | Funksiyaning differensialini hisoblash qoidalari |
| 54. | Yuqori tartibli hosilalar |

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| 55. | Differensial hisobning asosiy teoremasi (Ferma teoremai) |
| 56. | Differensial hisobning asosiy teoremasi (Roll teoremasi) |
| 57. | Differensial hisobning asosiy teoremasi (Lagranj teoremasi) |
| 58. | Differensial hisobning asosiy teoremasi (Koshi teoremasi) |
| 59. | Teylor formulasi |
| 60. | Ba’zi elementar funksiyalarning Makloren formulalari |
| 61. | Hosila yordamida funksiyani monotonlikka tekshirish |
| 62. | Funksiya ekstremumi tushunchasi |
| 63. | Funksiya ekstremumlarini birinchi hosila yordamida topish |
| 64. | Funksiya ekstremumlarini ikkinchi hosila yordamida topish |
| 65. | Boshlang‘ich funksiya tushunchasi |
| 66. | Boshlang‘ich funksiyani topishni sodda qoidalari |
| 67. | Aniqmas integral tushunchasi |
| 68. | Aniqmas integralning sodda xossalari |
| 69. | Aniqmas integralni hisoblashning sodda qoidalari |
| 70. | Aniqmas integrallarda o’zgaruvchilarni almashtirish usuli |
| 71. | Aniqmas integrallarda bo’laklab integrallash usuli |
| 72. | Ratsional funksiyalarni integrallash |
| 73. | Trigonometrik funksiyalarni integrallash |
| 74. | Ba’zi irratsional funksiyalarni integrallash |
| 75. | Binomial differensialni integralllash |
| 76. | Aniq integral (Riman integrali) ta’rifi |
| 77. | Aniq integralning mavjudligi |
| 78. | Integrallanuvchi funksiyalar sinfi |
| 79. | Aniq integralning xossalari |
| 80. | Nyuton-Leybnis formulasi |
| 81. | Aniq integrallarda o’zgaruvchilarni almashtirish usuli |
| 82. | Aniq integrallarda bo’laklab integrallash usuli |
| 83. | Aniq integral yordamida tekis shaklning yuzini topish |

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| 84. | Aniq integral yordamida aylanish jismining hajmini topish |
| 85. | Aniq integral yordamida yoy uzunligini topish |
| 86. | Funksiyaning o’rta qiymati |
| 87. | O’rta qiymat haqidagi teorema |
| 88. | Birinchi tur xosmas integral ta’rifi |
| 89. | Birinchi tur xosmas integralning yaqinlashishi tushunchasi |
| 90. | Xosmas integralning yaqinlashuvchiligida Kohi kriteriyasi |
| 91. | Xosmas integralning yaqinlashuvchiligida Dirixle alomati |
| 92. | Xosmas integralning yaqinlashuvchiligida Abel alomati |
| 93. | 1-tur xosmas integrallarda Nyuton-Leybnis formulasi |
| 94. | 1-tur xosmas integrallarda o’zgaruvchilarni almashtirish usuli |
| 95. | 1-tur xosmas integrallarda bo’laklab integrallash usuli |
| 96. | Nomanfiy funksiyaning 1-tur xosmas integrali uchun taqqoslash teoremalari |
| 97. | $\lim\limits_{n\to\infty}\dfrac{1+\frac{1}{2}+\frac{1}{4}+...+\frac{1}{2^n}}{1+\frac{1}{3}+\frac{1}{9}+...+\frac{1}{3^n}}$ ni hisoblang. |
| 98. | $\lim\limits_{n\to\infty}\dfrac{(n+2)!+(n+1)!}{(n+3)!}$ limitni hisoblang. |
| 99. | $\lim\limits_{n\to\infty}\left(\sqrt{n+1}-\sqrt{n}\right)$ limitni hisoblang. |
| 100. | $\lim\limits_{n\to\infty}\dfrac{2^n-1}{2^n+1}$ limitni hisoblang. |
| 101. | Hisoblang: $\lim\limits_{n\to\infty}\dfrac{(n+1)^4-(n-1)^4}{(n+1)^4+(n-1)^4}$; |
| 102. | Limitni hisoblang: $\lim\limits_{n\to\infty}\dfrac{(1+2n)^3-8n^3}{(1+2n)^2+4n^2}$ |
| 103. | Limitni hisoblang: $\lim\limits_{n\to\infty}\dfrac{(2n+1)!+(2n+2)!}{(2n+3)!}$ |
| 104. | $\lim\limits_{n\to\infty}\left(\dfrac{n+1}{n-1}\right)^n$ limitni hisoblang. |
| 105. | Limitni hisoblang: $\lim\limits_{n\to\infty}\left(1+\dfrac{1}{4n+1}\right)^{3n}$ |
| 106. | $\lim\limits_{n\to\infty}\dfrac{1+2+..+n}{n-n^2+3}$. limitni hisoblang |
| 107. | $\lim\limits_{n\to\infty}\dfrac{n!+(n+2)!}{(n-1)!+(n+2)!}$ limitni hisoblang |

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| 108. | $\lim\limits_{n\to\infty}\left(\frac{2+4+...+2n}{n+3}-n\right)$ limitni hisoblang |
| 109. | $\lim\limits_{n\to\infty}\frac{3+6+9+.....+3n}{n^2+4}$ limitni hisoblang |
| 110. | $\lim\limits_{n\to\infty}\frac{2^n+7^n}{2^n-7^{n-1}}$ limitni hisoblang |
| 111. | $\lim\limits_{n\to\infty}\frac{(5-n)^2-(5+n)^2}{(5+n)^2-(2-n)^2}$ limitni hisoblang |
| 112. | $\lim\limits_{n\to\infty}\frac{(2n+1)!+(2n-2)!}{(2n+3)!-(2n+2)!}$ limitni hisoblang |
| 113. | $\lim\limits_{n\to\infty}\frac{(n+1)^2}{2n^2}$ ni hisoblang. |
| 114. | $\lim\limits_{n\to\infty}\frac{n^3-100n^2+1}{100n^3+15n}$ ni hisoblang. |
| 115. | $\lim\limits_{n\to\infty}\left(\frac{2n+3}{2n+1}\right)^{n+1}$ limitni hisoblang. |
| 116. | $\lim\limits_{n\to\infty}\left(\frac{6n-7}{6n+4}\right)^{3n+2}$ limitni hisoblang. |
| 117. | $\lim\limits_{n\to\infty}\left(\frac{n+3}{n+5}\right)^{n+4}$ limitni hisoblang. |
| 118. | $\lim\limits_{n\to\infty}\left(\frac{2n-1}{2n+1}\right)^{n+1}$ limitni hisoblang. |
| 119. | $x_n=\frac{3n^2+n}{2^n}$ ketma-ketlikning limitini toping. |
| 120. | Limitni hisoblang: $\lim\limits_{x\to 0}\left(\frac{1}{\sin x}-\frac{1}{tgx}\right)$ |
| 121. | Quyida berilgan funksiyaning bir tomonli limitlarini toping: $f(x)=2^{\frac{1}{x-1}},\ x\to 1\pm 0.$ |
| 122. | Quyida berilgan funksiyaning bir tomonli limitlarini toping: $f(x)=\frac{4}{(x-2)^3},\ x\to 2\pm 0.$ |
| 123. | Quyidagi limitni hisoblang: $\lim\limits_{x\to 1}\frac{x^2-1}{2x^2-x-1}$ |
| 124. | Quyidagi limitni hisoblang: $\lim\limits_{x\to\infty}\frac{x^2-1}{2x^2-x-1}$ |
| 125. | Quyidagi limitni hisoblang: $\lim\limits_{x\to 0}\frac{(x+1)(2x+1)(3x+1)-1}{x}$ |
| 126. | $x\to 2$ da $f(x)=\frac{x^2-3x+2}{2x^2-5x+2}$ funksiyaning limitini toping. |
| 127. | Quyidagi limitni hisoblang: $\lim\limits_{x\to 3}\frac{x^2-5x+6}{x^2-8x+15}$ |

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| 128. | Quyidagi limitni hisoblang: $\lim\limits_{x\to+\infty}\left(\frac{x+1}{x-2}\right)^{2x-1}$ |
| 129. | Limitni hisoblang: $\lim\limits_{x\to 0}\frac{\sin 5x}{\sin 8x}$ |
| 130. | Lopital qoidalaridan foydalanib, quyidagi funksiyaning limitlarini hisoblang: $\lim\limits_{x\to 1}\frac{3x^2+5x-8}{4x^2+3x-7}$ |
| 131. | Lopital qoidalaridan foydalanib, quyidagi funksiyaning limitlarini hisoblang: $\lim\limits_{x\to 4}\frac{\ln(x^2-15)}{3x^2-10x-8}$ |
| 132. | $\lim\limits_{x\to 1}\frac{x^2-3x+2}{x-1}$ ni toping. |
| 133. | $\lim\limits_{x\to 0}\frac{tg8x}{x}$ ni toping. |
| 134. | $\lim\limits_{x\to 2}\frac{x^2+5}{x^2-3}$ ni hisoblang. |
| 135. | Funksiyaning aniqlanish sohasini toping: $f(x)=\frac{x-2}{x^2-1}$ |
| 136. | Funksiyaning aniqlanish sohasini toping: $f(x)=\frac{x^2+2}{x(x+2)}$ |
| 137. | Funksiyaning aniqlanish sohasini toping: $f(x)=\frac{x-12}{x+12}$ |
| 138. | Funksiyaning aniqlanish sohasini toping $y=\sqrt{x-1}+\sqrt{6-x}$ |
| 139. | Funksiyaning aniqlanish sohasini toping $y=\log_2\frac{x-2}{x+2}$ |
| 140. | Funksiyaning aniqlanish sohasini toping $y=\arccos\frac{3x+4}{5}$ |
| 141. | Funksiyaning uzilish nuqtalarini toping $y=\frac{x-3}{x^3-9x}$ |
| 142. | $f(x)=\ln(x^2+x-2)$ funksiyaning aniqlanish sohasini toping. |
| 143. | Limitni hisoblang: $\lim\limits_{x\to+\infty}\frac{2^x+7^x}{2^x+7^{x-1}}$ |
| 144. | $a$ ning qanday qiymatlarida quyidagi funksiya uzluksiz bo‘ladi? : $f(x)=\begin{cases}\frac{\sin x}{x}, & x\neq 1\\ a, & x=1.\end{cases}$ |
| 145. | $a$ ning qanday qiymatlarida quyidagi funksiya uzluksiz bo‘ladi? : $f(x)=\begin{cases}x\sin\frac{1}{x}, & x\neq 0\\ a, & x=0.\end{cases}$ |
| 146. | $a$ ning qanday qiymatlarida quyidagi funksiya uzluksiz bo‘ladi? : |

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| | $f(x)=\begin{cases}\dfrac{(1+x)^{\beta}-1}{x}, & x\neq 0\\ a, & x=0.\end{cases}$ |
| 147. | Hosila olish jadvalidan foydalanib quyidagi funksiyaning hosilasini toping:$y=\frac{(1-x)^3}{(1+x)^4}$ |
| 148. | Quyidagi berilgan funksiyaning hosilasining ko‘rsatilgan nuqtadagi xususiy qiymatsini aniqlang:<br>$y=(x-a)(x-b)(x-c),\ x_0=a.$ |
| 149. | Quyidagi berilgan funksiyaning hosilasining ko‘rsatilgan nuqtadagi xususiy qiymatini aniqlang:<br>$y=\dfrac{x-a}{x-b},\ a\neq b,\ \ x_0=a.$ |
| 150. | Quyidagi funksiyaning differensialini toping<br>$:y=\frac{1}{a}arctg\frac{x}{a}(a\neq 0)$ |
| 151. | Quyidagi funksiyaning differensialini toping:<br>$y=\dfrac{x}{\sqrt{1-x^2}}$ |
| 152. | Quyidagi funksiyaning differensialini toping:<br>$y=arcsin\dfrac{x}{a}(a\neq 0)$ |
| 153. | Quyidagi funksiyaning berilgan nuqtadagi ko‘rsatilgan tartibdagi hosilasni toping:<br>$y=x^6-4x^3+4,\quad y^{(IV)}(1)=?$ |
| 154. | Funksiyaning hosilasini toping: $y=lntg\left(\frac{x}{2}+\frac{\pi}{4}\right),$ |
| 155. | $d\left(\dfrac{x}{\sqrt{1-x^2}}\right)=?$ |
| 156. | $y=e^x lnx, d^4y=?$ |
| 157. | $y=\sqrt{1+x^2},\quad y''=?$ |
| 158. | $y=e^x lnx, d^2y=?$ |
| 159. | $f(x)=\frac{x^3}{3}+\frac{x^2}{2}-\frac{1}{2x}$ funksiya hosilasining $x=1$ qiymatini toping. |
| 160. | $f(x)=arctg(x^3+1)$ funksiya hosilasining $x=0$ nuqtadagi qiymatini toping. |
| 161. | Lopital qoidalaridan foydalanib, quyidagi funksiyaning limitlarini hisoblang: $\lim\limits_{x\to 1}\dfrac{3x^2+5x-8}{4x^2+3x-7}$ |
| 162. | Lopital qoidalaridan foydalanib, quyidagi funksiyaning limitlarini hisoblang: $\lim\limits_{x\to 4}\dfrac{\ln(x^2-15)}{3x^2-10x-8}$ |
| 163. | $y=3^x$ funksiya uchun $y^{(10)}$ toping. |
| 164. | $y=3x-x^3$ funksiyaning monoton o’suvchi oralig'ini toping. |

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| 165. | $y = x^2 - 4x + 6$ funksiyaning $[-3, 10]$ segmentdagi eng kichik qiymatini toping. |
| 166. | $y = x^2 - 4x + 6$ funksiyaning $[-3, 10]$ segmentdagi eng katta qiymatini toping. |
| 167. | Lopital qoidasi bo'yicha hisoblang $\lim\limits_{x\to 0}\dfrac{e^{tgx} - e^{x}}{tgx - x}$ |
| 168. | $f(x) = e^{2x-1}$ uchun $f''(0)$ ni toping. |
| 169. | $y = \dfrac{\sqrt{x}}{x+100}$ $(x \geq 0)$ ning o'sish va kamayish oraliqlarini toping. |
| 170. | $y = e^{x} lnx, d^{3}y = ?$ |
| 171. | $y = \dfrac{x^2}{1-x}, \quad y^{(3)} = ?$ |
| 172. | Quyidagi funksiyaning differensialini toping: $y = \dfrac{1}{\sqrt{x^2 + a^2}}$ |
| 173. | Quyidagi funksiyaning sakkizinchi tartibli hosilasini toping: $y = 3^{x}$ |
| 174. | Quyidagi funksiyaning yuqori tartibli differensialini toping? $y = \cos x$ |
| 175. | Funksiya hosilasini berilgan nuqtadagi qiymatini toping: $f(x) = \dfrac{x^3}{3} + \dfrac{x^2}{2} - \dfrac{1}{2x}, \quad x = 1.$ |
| 176. | Funksiya hosilasini berilgan nuqtadagi qiymatini toping: $f(x) = arctg(x^3 + 1), \quad x = 0.$ |
| 177. | Quyidagi funksiya hosilasining nol nuqtadagi qiymatini toping: $y = \dfrac{x-1}{x+1} + xe^{2x} + arctg3x$ |
| 178. | Quyidagi funksiyaning yuqori tartibli differensialini toping: $y = \cos 2x$ |
| 179. | Funksiyaning monoton o'suvchi oralig'ini toping: $y = 4x - x^4$ |
| 180. | Funksiyaning differensialini toping: $y = \arcsin 3x$ |
| 181. | $\int (3x-5)^{10}\, dx.$ ni hisonlang |

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| 182. | Toping: $\int\left(\frac{a}{x}+\frac{a^2}{x^2}+\frac{a^3}{x^3}\right)dx$. |
| 183. | Aniqmas integralni toping: $\int\left(e^{2x}+\sin 2x\right)dx$ |
| 184. | Aniqmas integralni toping: $\int\left(1-x^2\right)^2 dx$ |
| 185. | Aniqmas integralni toping: $\int\left(\sin 5x-\cos x\right)dx$ |
| 186. | Aniqmas integralni toping: $\int\frac{1}{(x-1)(x+3)}dx$ |
| 187. | Aniqmas integralni toping: $\int\frac{\sin x}{\cos^2 x}dx$ |
| 188. | Aniqmas integralni toping: $\int 2x\sqrt{x^2+1}dx$. |
| 189. | Aniqmas integralni toping: $\int x^2\sqrt[5]{x^3+2}dx$. |
| 190. | Aniqmas integralni toping: $\int\frac{x^2}{x^3+1}dx$. |
| 191. | Aniqmas integralni toping: $\int\frac{dx}{xlnx}$. |
| 192. | Aniqmas integralni toping: $\int x\sqrt{x-5}dx$. |
| 193. | $\int\frac{dx}{1+e^x}$. ni hisonlang |
| 194. | Aniqmas integralni toping: $\int\frac{sinx}{\sqrt{cosx}}dx$. |
| 195. | $\int\sin 3x\cos 2x\,dx$ integralni hisoblang. |
| 196. | $\int\cos^2 3xdx$ integralni hisoblang. |
| 197. | $\int\frac{xdx}{(x-2)(x+3)}=?$ |
| 198. | Aniqmas integralni toping: $\int lnxdx$. |
| 199. | Aniqmas integralni toping: $\int\frac{xdx}{\sqrt{x^2+4}}$. |
| 200. | Aniqmas integralni toping: $\int\frac{x^3dx}{\sqrt{x^4+4}}$. |
| 201. | $\int\frac{2x+3}{3x+2}dx$ ni hisoblang. |
| 202. | Aniqmas integralni toping: $\int\frac{x^2+2}{x^2-1}dx$ |
| 203. | Aniqmas integralni toping: $\int\frac{x^2+3}{x^2-1}dx$ |
| 204. | Aniqmas integralni toping: $\int\frac{x^2}{x^2+1}dx$ |
| 205. | Aniqmas integralni toping : $y=\int xe^{-x}dx;$ |
| 206. | Aniqmas integralni toping : $\int\frac{dx}{\sqrt{x}+\sqrt[4]{x}}$. |

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| 207. | $\int \frac{dx}{\sqrt{x}+\sqrt[3]{x}}$ ni hisoblang |
| 208. | Aniqmas integralni toping: $\int lnxdx.$ |
| 209. | Integralni hisoblang: $\int_0^1 arccosxdx.$ |
| 210. | Integralni hisoblang: $\int_{\frac{1}{\sqrt{3}}}^{\sqrt{3}} \frac{dx}{1+x^2}$ |
| 211. | Integralni hisoblang: $\int_0^{\frac{\pi}{4}} xarctgxdx.$ |
| 212. | Integralni hisoblang: $\int_{-1}^{1} \frac{xdx}{\sqrt{5-4x}}.$ |
| 213. | Quyidagi chiziqning yoy uzunligini toping: $y = x^{\frac{3}{2}}$ $(0 \le x \le 4)$. |
| 214. | Integralni hisoblang: $\int_{-b}^{+b} \left(x^2 - 1\right)dx \quad (b > 0)$ |
| 215. | Quyidagi chiziqlar bilan chegaralangan shaklning yuzini hisoblang: $y = x^2,\ y = 0,\ x = 0,\ x = 2.$ |
| 216. | Quyidagi chiziqlar bilan chegaralangan shaklning yuzini hisoblang: $y = \sqrt{x},\ y = 0,\ x = 4$ |
| 217. | Quyidagi chiziqlar bilan chegaralangan shaklning yuzini toping: $y = \frac{1}{\sqrt{x}},\ y = 0,\ x = 1,\ \ x = 4$ |
| 218. | Quyidagi chiziqlar bilan chegaralangan shaklning yuzini hisoblang: $y = \sin 2x,\ y = 0,\ x = 0,\ \ x = \frac{\pi}{2}$ |
| 219. | Aniq integralni hisoblang: $\int_0^{\pi} x\sin x dx$ |
| 220. | Aniq integralni hisoblang: $\int_{-1}^{1} \frac{x}{\sqrt{5-4x}} dx$ |
| 221. | $\int_{-2}^{0} (\lvert x \rvert + 1)dx$ Hisoblang: |
| 222. | Chiziqning berilgan oraliqqa mos qismining uzunligini toping: $y = \frac{2}{3}x^{\frac{3}{2}},\quad 0 \le x \le 3.$ |
| 223. | Quyidagi chiziqlar bilan chegaralangan shaklning yuzini toping: $y = x^2,\quad x + y = 2.$ |

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| 224. | Hisoblang: $\int_0^1 \frac{dx}{1+x^2}$ |
| 225. | Hisoblang: $\int_0^2 \frac{dx}{\sqrt{x+1}}$ |
| 226. | $\int_1^2 \frac{dx}{x\ln x}$ xosmas integralning uzoqlashuvchi ekanligini ko'rsating |
| 227. | Xosmas integralni hisoblang: $\int_1^3 \frac{dx}{(3-x)^{\frac{1}{2}}}$ |
| 228. | Xosmas integralni hisoblang: $\int_1^2 \frac{xdx}{x^2-1}$ |
| 229. | Xosmas integralni hisoblang: $\int_0^3 \frac{x^2dx}{\sqrt{9-x^2}}$ |
| 230. | Xosmas integralni hisoblang: $\int_0^4 \frac{dx}{\sqrt{x}+x}$ |
| 231. | Xosmas integralni hisoblang: $\int_0^2 \left(\frac{2}{\sqrt{2-x}}+\frac{1}{\sqrt{x}}\right)dx$ |
| 232. | Xosmas integralni hisoblang: $\int_0^3 \left(\frac{3}{\sqrt[3]{x}}+\frac{8}{(3-x)^{\frac{1}{4}}}\right)dx$ |
| 233. | Xosmas integralni hisoblang: $\int_0^1 \frac{1-x}{\sqrt[3]{x}}dx$ |
| 234. | Hisoblang: $\int_0^1 \frac{\left(\sqrt[6]{x}+1\right)^2}{\sqrt{x}}dx$ |
| 235. | Hisoblang: $\int_{-1}^1 \frac{\arccos x}{\sqrt{1-x^2}}dx$ |
| 236. | Hisoblang: $\int_0^1 \frac{\arcsin x}{\sqrt{1-x^2}}dx$ |
| 237. | Hisoblang: $\int_0^1 \frac{dx}{2\sqrt{x}}$ |
| 238. | Hisoblang: $\int_{-\infty}^0 xe^x dx$ |
| 239. | Xosmas integralni yaqinlashishga tekshiring: $\int_1^{+\infty} \frac{arctgx}{1+x^2}dx$ |
| 240. | Hisoblang: $\int_e^{+\infty} \frac{dx}{x\ln^2 x}$ |
| 241. | Hisoblang: |

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| | $\int_{-\infty}^{0} e^{5x}dx$ |
| 242. | Hisoblang:<br>$\int_{-\infty}^{\infty} \frac{dx}{x^2+9}$ |
| 243. | Xosmas integralni hisoblang:<br>$\int_{0}^{\infty} e^{-\alpha x}dx,\ \alpha > 0$ |
| 244. | Integralni xisoblang.<br>$\int_{-1}^{1} \frac{dx}{\sqrt{1-x^2}}$ |
| 245. | Xosmas integralni hisoblang:<br>$\int_{1}^{2} \frac{dx}{\sqrt{x-1}}$ |
| 246. | Hisoblang:<br>$\int_{-\infty}^{+\infty} \frac{dx}{1+x^2}$ |
| 247. | Integralni hisoblang.<br>$\int_{0}^{\infty} x \cdot e^{-x^2}dx$ |
| 248. | Xosmas integralni qiymatini toping:<br>$\int_{2}^{\infty} \frac{dx}{x^2+x-2}$ |
| 249. | Xosmas integralni yaqinlashishga tekshiring: $\int_{0}^{1} \frac{dx}{x^{\alpha}}, \alpha > 0$ |
| 250. | Xosmas integralni qiymatini toping:<br>$\int_{0}^{1} \ln x dx$ |