Ответы к контрольной работе ...

1) [1] $\dfrac{24}{37\sqrt[8]{x^{37}}} - \dfrac{3x^4}{4} - 3\ln|x|$ [2] $(x-6)\,e^x$

[3] $\dfrac{1}{x-3} + 2\ln|x-3| + 3\ln|x+1|$ [4] $\dfrac{1}{7}e^{(\sin 7x-1)}$

[5] $\dfrac{32}{3}$ [6] 360 кН

2) [1] $\dfrac{8}{\sqrt{x}} - x^2 - 3\ln|x|$

[2] $-\dfrac{1}{5}(x+1)\cos 5x + \dfrac{1}{25}\sin 5x$

[3] $-\dfrac{1}{2}\dfrac{1}{x+3} + \ln|x+3| + \dfrac{1}{2}\ln|x-2|$

[4] $\dfrac{1}{15}e^{(5x^3+9)}$ [5] $\dfrac{9}{2}$ [6] 1960 кН

3) [1] $\dfrac{15}{\sqrt[5]{x}} - \dfrac{4x^5}{5} - 3\ln|x|$ [2] $\left(\dfrac{x}{3} - \dfrac{1}{9}\right)e^{3x}$

[3] $\ln\left(x^2+2x+2\right) - \ln|x+4| - 3\operatorname{arctg}(x+1)$

[4] $-\dfrac{1}{7}e^{-\sin 7x+2}$ [5] $\dfrac{8}{3}$ [6] 800 кН

4) [1] $-\dfrac{6}{\sqrt{x}} - 2x^2 - 3\ln|x|$ [2] $\left(\dfrac{x}{2} + \dfrac{3}{4}\right)e^{2x}$

[3] $-\dfrac{1}{3}\dfrac{1}{x+3} + \dfrac{2}{3}\ln|x+3| - \dfrac{1}{3}\ln|x+2|$

[4] $\dfrac{1}{3}e^{-\cos 3x-4}$ [5] 4 [6] 1800 кН

5) [1] $\dfrac{12}{\sqrt[4]{x}} - \dfrac{x^4}{2} - 2\ln|x|$

[2] $-\dfrac{1}{4}(x+4)\cos 4x + \dfrac{1}{16}\sin 4x$

[3] $2\ln|x-3| + 2\ln|x-2| + \ln|x-5|$

[4] $\dfrac{1}{16}e^{(8x^2+7)}$ [5] $\dfrac{64}{3}$ [6] 450 кН

6) [1] $-\dfrac{5}{7\sqrt[5]{x^7}} + x^4 + 3\ln|x|$

[2] $\dfrac{1}{3}(x-3)\sin 3x + \dfrac{1}{9}\cos 3x$

[3] $\dfrac{2}{x+3} - 2\ln|x+3| - 3\ln|x-1|$ [4] $\dfrac{1}{7}e^{(\sin 7x+5)}$

[5] $\dfrac{125}{2}$ [6] 1800 кН

7) [1] $\dfrac{24}{29\sqrt[6]{x^{29}}} + 2x^2 + 3\ln|x|$ [2] $\left(\dfrac{x}{5} + \dfrac{24}{25}\right)e^{5x}$

[3] $-2\ln|x-4| + 2\ln|x-1| + 3\ln|x-3|$

[4] $-\dfrac{1}{12}e^{-4x^3-8}$ [5] $\dfrac{64}{3}$ [6] 160 кН

8) [1] $-\dfrac{20}{7\sqrt[5]{x^7}} - \dfrac{3x^4}{4} - 2\ln|x|$ [2] $\left(\dfrac{x}{3} - \dfrac{4}{9}\right)e^{3x}$

[3] $-\dfrac{1}{3}\ln|x+3| + \dfrac{2}{3}\ln|x-2| + \ln|x-6|$

[4] $\dfrac{1}{4}e^{(\sin 4x+8)}$ [5] $\dfrac{1}{3}$ [6] 1250 кН

9) [1] $\dfrac{8}{\sqrt{x}} - 2x^2 - 3\ln|x|$ [2] $\dfrac{1}{3}(x-2)\sin 3x + \dfrac{1}{9}\cos 3x$

[3] $\dfrac{2}{x-3} + 2\ln|x-3| - 3\ln|x+2|$ [4] $-\dfrac{1}{8}e^{-4x^2-2}$

[5] 108 [6] 800 кН

10) [1] $\dfrac{32}{37\sqrt[8]{x^{37}}} - x^4 - 3\ln|x|$

[2] $\left(\dfrac{x^2}{2} - 4x\right)\ln x - \dfrac{x^2}{4} + 4x$

[3] $\dfrac{1}{2}\ln|x-4| + \ln|x-2| + \dfrac{3}{2}\ln|x-5|$

[4] $\dfrac{1}{3}e^{-\cos 3x-9}$ [5] $\dfrac{8}{3}$ [6] 450 кН

11) [1] $-\dfrac{36}{41\sqrt[9]{x^{41}}} - \dfrac{2x^5}{5} - 2\ln|x|$

[2] $\dfrac{1}{14}\sin 7x - \dfrac{1}{18}\sin 9x$

[3] $-2\ln|x+3| + 2\ln|x-2| - 3\ln|x-5|$

[4] $\dfrac{1}{10}e^{(5x^2+2)}$ [5] $\dfrac{32}{3}$ [6] 800 кН

12) [1] $\dfrac{3}{4\sqrt[3]{x^4}} + \dfrac{4x^5}{5} + 3\ln|x|$ [2] $\dfrac{1}{4}\sin 2x - \dfrac{1}{36}\sin 18x$

[3] $\dfrac{1}{2}\ln\left(x^2-4x+5\right) - \ln|x-4| + \dfrac{3}{2}\operatorname{arctg}(x-2)$

[4] $\dfrac{1}{8}e^{-\cos 8x+2}$ [5] 9 [6] 450 кН

13) [1] $-\dfrac{15}{7\sqrt[5]{x^7}} + \dfrac{3x^4}{4} + 2\ln|x|$ [2] $\dfrac{1}{10}\sin 5x + \dfrac{1}{34}\sin 17x$

[3] $-\dfrac{1}{2}\dfrac{1}{x+4} + \ln|x+4| + \dfrac{1}{2}\ln|x-1|$ [4] $e^{-\cos x}$

[5] $\dfrac{1}{6}$ [6] 2450 кН

14) [1] $-\dfrac{7}{5\sqrt[7]{x^{25}}} - \dfrac{x^4}{4} - 2\ln|x|$ [2] $\dfrac{1}{2}\sin x + \dfrac{1}{6}\sin 3x$

[3] $\dfrac{2}{x-3} + 2\ln|x-3| + 3\ln|x-1|$ [4] $-\dfrac{1}{7}e^{(\cos 7x+4)}$

[5] $\dfrac{125}{2}$ [6] 450 кН

15) [1] $-\dfrac{20}{\sqrt[5]{x}} + \dfrac{3x^5}{5} + 3\ln|x|$ [2] $-\dfrac{1}{8}\cos 4x - \dfrac{1}{44}\cos 22x$

[3] $-\dfrac{1}{3}\dfrac{1}{x-3} + \dfrac{2}{3}\ln|x-3| - \ln|x+2|$

[4] $-\dfrac{1}{14}e^{-7x^2+4}$ [5] $\dfrac{64}{3}$ [6] 200 кН

16) [1] $-\dfrac{40}{37\sqrt[8]{x^{37}}} - \dfrac{x^4}{4} - 2\ln|x|$

[2] $-\dfrac{1}{6}\cos 3x - \dfrac{1}{42}\cos 21x$

[3] $-\dfrac{2}{x+3} + 2\ln|x+3| + \ln|x-2|$

[4] $-\dfrac{1}{4}e^{-\sin 4x+5}$ [5] $\dfrac{8}{3}$ [6] 1250 кН

17) [1] $\dfrac{12}{5\sqrt[3]{x^5}} - \dfrac{3x^2}{2} - 2\ln|x|$

[2] $-\dfrac{1}{16}\cos 8x - \dfrac{1}{36}\cos 18x$

[3] $\ln\left(x^2-2x+3\right) + \ln|x-3| + \dfrac{5\sqrt{2}}{2}\operatorname{arctg}\dfrac{x-1}{\sqrt{2}}$

[4] $\dfrac{1}{6}e^{\sin 6x}$ [5] 4 [6] 1250 кН

18) [1] $-\dfrac{7}{5\sqrt[7]{x^{25}}} - x^4 - 3\ln|x|$

[2] $-\dfrac{1}{12}\cos 6x - \dfrac{1}{48}\cos 24x$

[3] $-\dfrac{1}{x+3} - 2\ln|x+3| - \ln|x+2|$ [4] $\dfrac{1}{8}e^{(\sin 8x-1)}$

[5] 9 [6] 1000 кН

19) [1] $-\dfrac{24}{29\sqrt[6]{x^{29}}} + \dfrac{3x^2}{2} + 3\ln|x|$

[2] $\dfrac{1}{16}\sin 8x - \dfrac{1}{36}\sin 18x$

[3] $\dfrac{5}{3}\ln|x-3| + \dfrac{2}{3}\ln|x+1|$ [4] $e^{-\cos x-2}$ [5] $\dfrac{64}{3}$

[6] 2450 кН

20) [1] $-\dfrac{25}{\sqrt[5]{x}} - \dfrac{4x^5}{5} - 3\ln|x|$ [2] $-\dfrac{1}{8}\cos 4x - \dfrac{1}{16}\cos 8x$

[3] $-\dfrac{1}{2}\dfrac{1}{x+4} + \ln|x+4| + \dfrac{3}{2}\ln|x+1|$

[4] $-\dfrac{1}{5}e^{-\sin 5x-1}$ [5] 4 [6] 360 кН

21) [1] $-\dfrac{15}{13\sqrt[5]{x^{13}}} + x^3 + 3\ln|x|$ [2] $\dfrac{\sqrt{5}}{10}\operatorname{arctg}\dfrac{2\sqrt{5}x}{5}$

[3] $-\ln|x-4| + \ln|x-2| + \dfrac{3}{2}\ln|x-5|$

[4] $-\dfrac{1}{40\operatorname{arctg}^5 8x}$ [5] 18 [6] 640 кН

22) [1] $-\dfrac{20}{19\sqrt[5]{x^{19}}} - 2x^2 - 3\ln|x|$

[2] $\dfrac{\sqrt{2}}{4}\ln\left(2\sqrt{2}x + \sqrt{8x^2+5}\right)$

[3] $\dfrac{1}{3}\ln\left(x^2-4x+6\right) - \dfrac{2}{3}\ln|x-3| + \dfrac{\sqrt{2}}{6}\operatorname{arctg}\dfrac{x-2}{\sqrt{2}}$

[4] $\dfrac{1}{3}\arcsin^{\frac{3}{2}} 2x$ [5] 9 [6] 1800 кН

23) [1] $-\dfrac{3}{\sqrt[3]{x^4}} + \dfrac{2x^5}{5} + 2\ln|x|$ [2] $\dfrac{\sqrt{2}}{4}\arcsin\sqrt{2}x$

[3] $-\ln|x+3| + \ln|x-2| + \dfrac{1}{2}\ln|x-6|$

[4] $\dfrac{7}{9}\ln|\operatorname{arctg} 9x|$ [5] 18 [6] 1000 кН

24) [1] $\dfrac{21}{17\sqrt[7]{x^{17}}} - \dfrac{2x^5}{5} - 2\ln|x|$ [2] $\dfrac{\sqrt{5}}{5}\arcsin\dfrac{\sqrt{15}x}{3}$

[3] $\dfrac{1}{3}\ln\left(x^2-2x+3\right) - \dfrac{1}{3}\ln|x+4| + \dfrac{\sqrt{2}}{2}\operatorname{arctg}\dfrac{x-1}{\sqrt{2}}$

[4] $\dfrac{2}{7}\ln|\operatorname{arctg} 7x|$ [5] 9 [6] 1800 кН

25) [1] $\dfrac{10}{7\sqrt{x^7}} + \dfrac{2x^5}{5} + 2\ln|x|$ [2] $\dfrac{\sqrt{6}}{24}\ln\left|\dfrac{\sqrt{6}x-2}{\sqrt{6}x+2}\right|$

[3] $-2\ln|x-4| + 2\ln|x-1| + \ln|x-3|$

[4] $-\dfrac{1}{27}\arccos^3 9x$ [5] 18 [6] 200 кН

26) [1] $\dfrac{9}{41\sqrt[9]{x^{41}}} + \dfrac{2x^5}{5} + 3\ln|x|$ [2] $\dfrac{\sqrt{2}}{6}\operatorname{arctg}\sqrt{2}x$

[3] $\dfrac{1}{x+4} - 2\ln|x+4| - \ln|x-1|$ [4] $\dfrac{1}{27\arccos^3 9x}$

[5] 144 [6] 2450 кН

27) [1] $\dfrac{8}{\sqrt[4]{x}} - \dfrac{x^4}{4} - 2\ln|x|$ [2] $\dfrac{\sqrt{7}}{7}\arcsin\dfrac{\sqrt{7}x}{2}$

[3] $-\dfrac{2}{3}\ln|x+4| - \dfrac{2}{3}\ln|x+1| - \ln|x-3|$

[4] $\dfrac{1}{72}\operatorname{arctg}^8 9x$ [5] 72 [6] 1000 кН

28) [1] $\dfrac{3}{4\sqrt[3]{x^4}} + \dfrac{3x^5}{5} + 3\ln|x|$ [2] $\dfrac{1}{2}\ln\left(2x + \sqrt{4x^2+5}\right)$

[3] $2\ln|x-3| + 2\ln|x+2| + \ln|x-5|$

[4] $-\dfrac{2}{15}\arccos^{\frac{5}{2}} 3x$ [5] 9 [6] 640 кН

29) [1] $-\dfrac{24}{29\sqrt[6]{x^{29}}} - 2x^2 - 3\ln|x|$ [2] $\dfrac{\sqrt{2}}{2}\arcsin\dfrac{\sqrt{6}x}{3}$

[3] $\dfrac{1}{3}\ln|x+3| + \dfrac{2}{3}\ln|x+1| - \dfrac{1}{3}\ln|x-3|$

[4] $\dfrac{1}{15\operatorname{arcctg}^5 3x}$ [5] 144 [6] 1960 кН

30) [1] $-\dfrac{27}{41\sqrt[9]{x^{41}}} - \dfrac{x^5}{5} - 2\ln|x|$ [2] $\dfrac{\sqrt{6}}{6}\arcsin\sqrt{2}x$

[3] $-\dfrac{1}{x-4} + \ln|x-4| + \dfrac{3}{2}\ln|x-2|$

[4] $-\dfrac{2}{27}\arccos^{\frac{3}{2}} 9x$ [5] 72 [6] 1250 кН

31) [1] $-\dfrac{6}{29\sqrt[6]{x^{29}}} + x^2 + 3\ln|x|$ [2] $\arcsin\dfrac{\sqrt{2}x}{2}$

[3] $\dfrac{1}{2}\ln|x+3| - \ln|x+2| + \dfrac{1}{2}\ln|x-6|$

[4] $\ln|\arcsin 5x|$ [5] 18 [6] 1000 кН

32) [1] $-\dfrac{10}{13\sqrt[5]{x^{13}}} - \dfrac{2x^3}{3} - 3\ln|x|$ [2] $\dfrac{\sqrt{2}}{2}\operatorname{arctg}\dfrac{\sqrt{2}x}{2}$

[3] $-\ln|x+4| + 2\ln|x+2| - 3\ln|x-5|$

[4] $\dfrac{1}{9\operatorname{arcctg}^3 3x}$ [5] 9 [6] 1250 кН

33) [1] $-\dfrac{3}{2\sqrt[3]{x^4}} - \dfrac{3x^5}{5} - 3\ln|x|$ [2] $\ln\left(x+\sqrt{x^2+2}\right)$

[3] $-\ln|x-4| - 2\ln|x+1| + 3\ln|x-3|$

[4] $-\dfrac{1}{24\operatorname{arctg}^4 6x}$ [5] 144 [6] 1440 кН

34) [1] $-\dfrac{25}{13\sqrt[5]{x^{13}}} - \dfrac{4x^3}{3} - 3\ln|x|$

[2] $\dfrac{\sqrt{6}}{6}\ln\left(\sqrt{6}x+\sqrt{6x^2+4}\right)$

[3] $-2\ln|x-4| - 2\ln|x+1| + \ln|x-3|$

[4] $-\dfrac{5}{6}\ln\arccos 6x$ [5] 144 [6] 640 кН

35) [1] $\dfrac{16}{11\sqrt[4]{x^{11}}} - \dfrac{3x^2}{2} - 3\ln|x|$ [2] $\dfrac{\sqrt{3}}{3}\arcsin\dfrac{\sqrt{6}x}{2}$

[3] $-\dfrac{1}{2}\ln|x-3| - \ln|x-1| + \dfrac{1}{2}\ln|x-2|$

[4] $-\dfrac{2}{15}\arccos^{\frac{3}{2}} 5x$ [5] 72 [6] 1440 кН

36) [1] $-\dfrac{12}{29\sqrt[6]{x^{29}}} + \dfrac{x^2}{2} + 2\ln|x|$ [2] $\dfrac{\sqrt{2}}{4}\ln\left|\dfrac{x-\sqrt{2}}{x+\sqrt{2}}\right|$

[3] $-\dfrac{2}{x+4} + 2\ln|x+4| + \ln|x-2|$

[4] $-\dfrac{3}{2}\ln\operatorname{arcctg} 4x$ [5] 18 [6] 200 кН

37) [1] $\dfrac{36}{41\sqrt[9]{x^{41}}} + \dfrac{2x^5}{5} + 3\ln|x|$ [2] $\dfrac{\sqrt{10}}{40}\ln\left|\dfrac{2\sqrt{2}x-\sqrt{5}}{2\sqrt{2}x+\sqrt{5}}\right|$

[3] $-\dfrac{1}{2}\dfrac{1}{x+4} - \ln|x+4| - \dfrac{3}{2}\ln|x+1|$

[4] $-\dfrac{7}{3}\ln\operatorname{arcctg} 3x$ [5] 72 [6] 2450 кН

38) [1] $\dfrac{10}{19\sqrt[5]{x^{19}}} - 2x^2 - 3\ln|x|$ [2] $\dfrac{\sqrt{15}}{15}\operatorname{arctg}\dfrac{\sqrt{15}x}{3}$

[3] $-\ln|x+4| - 2\ln|x-2| + \ln|x-5|$

[4] $\dfrac{2}{15}\operatorname{arctg}^{\frac{5}{2}} 3x$ [5] 9 [6] 200 кН

39) [1] $-\dfrac{24}{37\sqrt[8]{x^{37}}} - x^4 - 3\ln|x|$

[2] $\dfrac{1}{3}\ln\left(3x+\sqrt{9x^2+5}\right)$

[3] $-\dfrac{1}{2}\dfrac{1}{x+3} + \ln|x+3| + \dfrac{1}{2}\ln|x+1|$

[4] $-\dfrac{1}{35}\operatorname{arcctg}^5 7x$ [5] 9 [6] 360 кН

40) [1] $\dfrac{12}{11\sqrt[3]{x^{11}}} + \dfrac{2x^3}{3} + 3\ln|x|$ [2] $\dfrac{\sqrt{3}}{6}\operatorname{arctg}\dfrac{\sqrt{3}x}{2}$

[3] $\dfrac{1}{3}\ln\left(x^2-2x+2\right) - \dfrac{1}{3}\ln|x+4| + \dfrac{5}{3}\operatorname{arctg}(x-1)$

[4] $-\dfrac{1}{54\operatorname{arctg}^6 9x}$ [5] 18 [6] 200 кН