2016/2017

Spočtěte limitu.

1. $\lim\limits_{x\to 1} \dfrac{1-\cos(1-x)}{1-x\,\mathrm{e}^{1-x}}$,

2. $\lim\limits_{x\to\infty} x^2 \ln\left(1+2x^{-2}\right)$

3. $\lim\limits_{x\to 1} \dfrac{1+x-2x^2+5\ln x}{1-\mathrm{e}^{x^2-1}}$,

4. $\lim\limits_{x\to\infty} \dfrac{1}{x\left(\mathrm{e}^{\frac{2}{x}}-1\right)}$,

5. $\lim\limits_{x\to\frac{\pi}{2}} \dfrac{\sin 2x}{\cos 3x}$

6. $\lim\limits_{x\to\infty} x\ln\left(1-\dfrac{2}{3x}\right)$

7. $\lim\limits_{x\to-\frac{1}{2}} \dfrac{\left(1-4x^2\right)^3}{\left(1+8x^3\right)^2}$

8. $\lim\limits_{x\to 0^+} x^2\,\ln^2 x$

9. $\lim\limits_{x\to 1} \dfrac{1-\sqrt{x}}{\sqrt{1-x}}$

10. $\lim\limits_{x\to 1} \dfrac{x-1}{1-\sqrt{3-2x}}$

11. $\lim\limits_{x\to-\infty} \left(x^2-3\right)\mathrm{e}^x$,

12. $\lim\limits_{x\to\infty} \dfrac{\left(3x^2+1\right)^3}{\left(1-x^3\right)^2}$

13. $\lim\limits_{x\to-1} \dfrac{1-\cos\left(1-x^2\right)}{1+x\,\mathrm{e}^{x+1}}$,

14. $\lim\limits_{x\to 0} \dfrac{2x-6x^2+\sin(10x)}{19\,\mathrm{tg}\,x+\cos(7x)-\mathrm{e}^{9x}}$

15. $\lim\limits_{x\to 1^-} \left(\dfrac{1}{x-1}-\dfrac{2}{x^2-1}\right)$

16. $\lim\limits_{x\to 1^+} \dfrac{\sin(1-x)}{1-\cos\left(1-\frac{1}{x}\right)}$

17. $\lim\limits_{x\to 3} \dfrac{\sin(\pi\,x)}{\ln(4-x)}$

18. $\lim\limits_{x\to 0} \dfrac{\sin\left(x^2\right)}{\left(1-\mathrm{e}^x\right)^2}$

19. $\lim\limits_{x\to\infty} x^2\mathrm{e}^{1-2x}$

20. $\lim\limits_{x\to 1^-} \dfrac{\arccos x}{\sqrt{1-x^2}}$

21. $\lim\limits_{x\to\frac{\pi}{2}^-} \left(\mathrm{tg}\,x-\dfrac{1}{\cos x}\right)$

22. $\lim\limits_{x\to 1} \dfrac{x-1}{\ln\sqrt{x}}$

23. $\lim\limits_{x\to 2} \dfrac{x^2-3x+2}{3x-2\sqrt{13-2x}}$

24. $\lim\limits_{x\to 0^+} \dfrac{1-\mathrm{e}^x}{\sqrt{x}}$

25. $\lim\limits_{x\to 0} x^2\ln\left(1+2x^{-2}\right)$

2016/2017

Spočtěte limitu.

1. $\lim\limits_{x\to 1} \dfrac{1-\cos(1-x)}{1-x\,\mathrm{e}^{1-x}} = 1,$

2. $\lim\limits_{x\to\infty} x^2 \ln\left(1+2x^{-2}\right) = 2,$

3. $\lim\limits_{x\to 1} \dfrac{1+x-2x^2+5\ln x}{1-\mathrm{e}^{x^2-1}} = -1,$

4. $\lim\limits_{x\to\infty} \dfrac{1}{x\left(\mathrm{e}^{\frac{2}{x}}-1\right)} = \dfrac{1}{2}$

5. $\lim\limits_{x\to\frac{\pi}{2}} \dfrac{\sin 2x}{\cos 3x} = -\dfrac{2}{3},$

6. $\lim\limits_{x\to\infty} x\ln\left(1-\dfrac{2}{3x}\right) = -\dfrac{2}{3},$

7. $\lim\limits_{x\to-\frac{1}{2}} \dfrac{\left(1-4x^2\right)^3}{\left(1+8x^3\right)^2} = 0,$

8. $\lim\limits_{x\to 0^+} x^2\,\ln^2 x = 0,$

9. $\lim\limits_{x\to 1} \dfrac{1-\sqrt{x}}{\sqrt{1-x}} = 0,$

10. $\lim\limits_{x\to 1} \dfrac{x-1}{1-\sqrt{3-2x}} = 1,$

11. $\lim\limits_{x\to-\infty} \left(x^2-3\right)\mathrm{e}^x = 0,$

12. $\lim\limits_{x\to\infty} \dfrac{\left(3x^2+1\right)^3}{\left(1-x^3\right)^2} = 27,$

13. $\lim\limits_{x\to-1} \dfrac{1-\cos\left(1-x^2\right)}{1+x\,\mathrm{e}^{x+1}} = 4,$

14. $\lim\limits_{x\to 0} \dfrac{2x-6x^2+\sin(10x)}{19\,\mathrm{tg}\,x+\cos(7x)-\mathrm{e}^{9x}} = \dfrac{6}{5},$

15. $\lim\limits_{x\to 1^-} \left(\dfrac{1}{x-1}-\dfrac{2}{x^2-1}\right) = \dfrac{1}{2},$

16. $\lim\limits_{x\to\frac{\pi}{2}} \dfrac{\sin 2x}{\cos 3x} = -\dfrac{2}{3},$

17. $\lim\limits_{x\to 3} \dfrac{\sin(\pi\,x)}{\ln(4-x)} = \pi,$

18. $\lim\limits_{x\to 3} \dfrac{\sin(\pi\,x)}{\ln(4-x)} = \pi,$

19. $\lim\limits_{x\to\infty} x^2\mathrm{e}^{1-2x} = 0,$

20. $\lim\limits_{x\to 1^-} \dfrac{\arccos x}{\sqrt{1-x^2}} = 1,$

21. $\lim\limits_{x\to\frac{\pi}{2}^-} \left(\mathrm{tg}\,x-\dfrac{1}{\cos x}\right) = 0,$

22. $\lim\limits_{x\to 1} \dfrac{x-1}{\ln\sqrt{x}} = 2,$

23. $\lim\limits_{x\to 2} \dfrac{x^2-3x+2}{3x-2\sqrt{13-2x}} = \dfrac{3}{11},$

24. $\lim\limits_{x\to 0^+} \dfrac{1-\mathrm{e}^x}{\sqrt{x}} = 0,$

25. $\lim\limits_{x\to 0} x^2\ln\left(1+2x^{-2}\right) = 0,$