Limiti di funzioni

Calcolare i seguenti limiti di funzioni:

1. $\lim_{x\to 3} \dfrac{x^2-6x+9}{x^2-9}$; $[0]$

2. $\lim_{x\to 9} \dfrac{\sqrt{x}-3}{x-9}$; $\left[\dfrac{1}{6}\right]$

3. $\lim_{x\to 0} \dfrac{|3x-1|-|3x+1|}{x}$; $[-6]$

4. $\lim_{x\to +\infty} \dfrac{x\sqrt{x+2}\left(1-\sqrt{3x+5}\right)}{5x^2-3x+7}$; $\left[-\dfrac{\sqrt{3}}{5}\right]$

5. $\lim_{x\to -\infty} \left(\dfrac{2x^2}{|x|+1}+x\right)$; $[+\infty]$

6. $\lim_{x\to -\infty} \left(\sqrt{x^2+2x}-\sqrt{x^2-2x}\right)$; $[-2]$

7. $\lim_{x\to 0} \dfrac{\sqrt{1+x}-1}{x}$; $\left[\dfrac{1}{2}\right]$

8. $\lim_{x\to 1} \dfrac{\sqrt{x}-1}{x-1}$; $\left[\dfrac{1}{2}\right]$

9. $\lim_{x\to 0^+} \sqrt{e^{\frac{1}{x}}}\left(\sqrt{e^{\frac{1}{x}}+1}-\sqrt{e^{\frac{1}{x}}-1}\right)$; $[1]$

10. $\lim_{x\to +\infty} \dfrac{\sqrt{2x+1}-\sqrt{2x}}{\sqrt{x+2}-\sqrt{x}}$; $\left[\dfrac{1}{2\sqrt{2}}\right]$

11. $\lim_{x\to 3} \dfrac{x-\sqrt{9x-18}}{x^2-9}$; $\left[-\dfrac{1}{2}\right]$

12. $\lim_{x\to 6} \dfrac{(x-7)(x^2-18x+72)}{x\sqrt{7}-\sqrt{x^2+216}}$; $[\sqrt{7}]$

13. $\lim_{x\to 3} \dfrac{\sqrt{9x-2}-5\sqrt{x-2}}{x^2-9}$; $\left[-\dfrac{4}{15}\right]$

14. $\lim_{x\to 2} \sqrt[3]{\dfrac{6-\sqrt{15x+6}}{4-x^2}}$; $\left[\sqrt[3]{\dfrac{5}{16}}\right]$

15. $\lim\limits_{x\to 3} 2^{\frac{x^3-8x^2+15x}{x^2-9}}\sqrt[3]{x-2}$; $\left[\frac{1}{2}\right]$

16. $\lim\limits_{x\to -7}\left(\frac{x^2+2x-35}{x^2+4x-21}\right)^{\frac{49-x^2}{x^2+15x+56}}$; $\left[\frac{6^{14}}{5^{14}}\right]$

17. $\lim\limits_{x\to 2}\frac{\sqrt{5x-2x^2+42}-2\sqrt{11}}{7x-x^2-10}$; $\left[-\frac{1}{4\sqrt{11}}\right]$

18. $\lim\limits_{x\to -3}\frac{\sqrt[3]{2x^3+7x^2-4x}-\sqrt[3]{21}}{21^{\frac{2}{x}}(3-7x^2-20x)}$; $\left[\frac{4}{33}\right]$

19. $\lim\limits_{x\to -5}\frac{\sqrt[3]{2\sqrt{24+x}}(\sqrt[3]{76}-\sqrt[3]{36-23x-3x^2})}{\sqrt{x^2+x-1}-\sqrt{19}}$; $\left[\frac{7}{27}\right]$

20. $\lim\limits_{x\to 2^-}\frac{x+2}{x^2-3x+2}$; $[-\infty]$

21. $\lim\limits_{x\to 0^+}\frac{\sqrt[3]{x^2}+\sqrt[4]{x^3}}{\sqrt{x^3}-\sqrt[3]{2x^2}}$. $\left[-\frac{1}{\sqrt[3]{2}}\right]$