Examen de Matemáticas 1º de Bachillerato CS

Diciembre 2019

Problema 1 Calcular los siguientes límites:

1. $\lim_{x \longrightarrow \infty} (-5x^4 + 3x^3 - 3x^2 + x - 5)$
2. $\lim_{x \longrightarrow \infty} \dfrac{7x^4 - 3x^2 - 2x - 4}{3x^5 + 2x - 1}$
3. $\lim_{x \longrightarrow \infty} \dfrac{\sqrt{3x^4 - 8x^2 + 2x + 2}}{-5x^2 + 8}$
4. $\lim_{x \longrightarrow \infty} \left(\sqrt{7x^2 - 5x + 1} - \sqrt{7x^2 + 3x - 1}\right)$
5. $\lim_{x \longrightarrow 1} \dfrac{5x^4 + 5x^3 - 12x^3 + x + 1}{3x^3 - 5x^2 + x + 1}$
6. $\lim_{x \longrightarrow 2} \dfrac{4x^3 - 9x^2 + x + 2}{2x^3 - 5x^2 + x + 2}$
7. $\lim_{x \longrightarrow 7} \dfrac{\sqrt{x^2 + 2} - \sqrt{8x - 5}}{x - 7}$
8. $\lim_{x \longrightarrow 5} \dfrac{\sqrt{x^2 - 2} - \sqrt{4x + 3}}{x - 5}$
9. $\lim_{x \longrightarrow \infty} \left(\dfrac{4x^2 - 3x + 7}{4x^2 + 5}\right)^{3x}$
10. $\lim_{x \longrightarrow \infty} \left(\dfrac{x^2 + 9x - 2}{5x^2 + 3x + 1}\right)^{9x^2 - 5}$
11. $\lim_{x \longrightarrow \infty} \dfrac{\sqrt{7x^2 + 5x + 3}}{-3x + 8}$
12. $\lim_{x \longrightarrow \infty} \dfrac{\sqrt{-5x^3 + 4x^2 - 3x + 5}}{2x^2 + 7}$
13. $\lim_{x \longrightarrow 0} \dfrac{3x^5 + 5x^4 - x^2 + 3x}{2x}$
14. $\lim_{x \longrightarrow \infty} \dfrac{\sqrt[3]{-7x^6 - 2x + 9}}{3x^2 + 4}$
15. $\lim_{x \longrightarrow \infty} \left(\sqrt{3x^2 - 6x + 1} + \sqrt{3x^2 + 5x - 3}\right)$

Solución:

1. $\lim\limits_{x \longrightarrow \infty} (-5x^4 + 3x^3 - 3x^2 + x - 5) = -\infty$
2. $\lim\limits_{x \longrightarrow \infty} \dfrac{7x^4 - 3x^2 - 2x - 4}{3x^5 + 2x - 1} = 0$
3. $\lim\limits_{x \longrightarrow \infty} \dfrac{\sqrt{3x^4 - 8x^2 + 2x + 2}}{-5x^2 + 8} = -\dfrac{\sqrt{3}}{5}$
4. $\lim\limits_{x \longrightarrow \infty} \left(\sqrt{7x^2 - 5x + 1} - \sqrt{7x^2 + 3x - 1}\right) = -\dfrac{4\sqrt{7}}{7}$
5. $\lim\limits_{x \longrightarrow 1} \dfrac{5x^4 + 5x^3 - 12x^3 + x + 1}{3x^3 - 5x^2 + x + 1} = -\dfrac{9}{4}$
6. $\lim\limits_{x \longrightarrow 2} \dfrac{4x^3 - 9x^2 + x + 2}{2x^3 - 5x^2 + x + 2} = \dfrac{13}{5}$
7. $\lim\limits_{x \longrightarrow 7} \dfrac{\sqrt{x^2 + 2} - \sqrt{8x - 5}}{x - 7} = \dfrac{\sqrt{51}}{17}$
8. $\lim\limits_{x \longrightarrow 5} \dfrac{\sqrt{x^2 - 2} - \sqrt{4x + 3}}{x - 5} = \dfrac{3\sqrt{23}}{23}$
9. $\lim\limits_{x \longrightarrow \infty} \left(\dfrac{4x^2 - 3x + 7}{4x^2 + 5}\right)^{3x} = e^{-9/4}$
10. $\lim\limits_{x \longrightarrow \infty} \left(\dfrac{x^2 + 9x - 2}{5x^2 + 3x + 1}\right)^{9x^2 - 5} = 0$
11. $\lim\limits_{x \longrightarrow \infty} \dfrac{\sqrt{7x^2 + 5x + 3}}{-3x + 8} = -\dfrac{\sqrt{7}}{3}$
12. $\lim\limits_{x \longrightarrow \infty} \dfrac{\sqrt{-5x^3 + 4x^2 - 3x + 5}}{2x^2 + 7}$ No existe
13. $\lim\limits_{x \longrightarrow 0} \dfrac{3x^5 + 5x^4 - x^2 + 3x}{2x} = \dfrac{3}{2}$
14. $\lim\limits_{x \longrightarrow \infty} \dfrac{\sqrt[3]{-7x^6 - 2x + 9}}{3x^2 + 4} = -\dfrac{\sqrt[3]{7}}{3}$
15. $\lim\limits_{x \longrightarrow \infty} \left(\sqrt{3x^2 - 6x + 1} + \sqrt{3x^2 + 5x - 3}\right) = \infty$