

Studio di funzione razionale

Periodo 3 - UdA 4

Trovare gli elementi caratterizzanti delle seguenti funzioni e rappresentarle graficamente

$$[1] \quad f(x) = \frac{x^2-9}{-3x-9}$$

$$[2] \quad f(x) = \frac{-2x^2-6x-4}{-x^3+x}$$

$$[3] \quad f(x) = \frac{-3x^2-15x-18}{-x^2-x+2}$$

$$[4] \quad f(x) = \frac{-x^3-x^2+2x}{-x^3+x^2+2x}$$

$$[5] \quad f(x) = \frac{2x^2}{-x^4-x^3+2x^2}$$

$$[6] \quad f(x) = \frac{5x^2+15x}{-x^2-x+6}$$

$$[7] \quad f(x) = \frac{-6x-24}{x^2+2x-8}$$

$$[8] \quad f(x) = \frac{-x^3-6x^2-9x}{3x}$$

$$[9] \quad f(x) = \frac{-9x^2+36x-27}{x^3-3x^2}$$

$$[10] \quad f(x) = \frac{-x^4+x^2}{-2x^2+6x-4}$$

CALCOLO DEL LIMITE PER LE FORME INDEFINITE

Studio di funzione razionale Periodo 3 - UdA 4

1. $\lim_{x \rightarrow -3} f(x) = \lim_{x \rightarrow -3} -\frac{(x-3)}{3} = -\frac{(-3-3)}{3} = -\frac{-6}{3} = 2$
2. $\lim_{x \rightarrow -1} f(x) = \lim_{x \rightarrow -1} \frac{2(x+2)}{x(x-1)} = \frac{2(-1+2)}{-1(-1-1)} = \frac{2}{2} = 1$
3. $\lim_{x \rightarrow -2} f(x) = \lim_{x \rightarrow -2} \frac{3(x+3)}{(x-1)} = \frac{3(-2+3)}{(-2-1)} = \frac{3}{-3} = -1$
4. $\lim_{x \rightarrow 0} f(x) = \lim_{x \rightarrow 0} \frac{(x+2)(x-1)}{(x-2)(x+1)} = \frac{(0+2)(0-1)}{(0-2)(0+1)} = \frac{-2}{-2} = 1$
5. $\lim_{x \rightarrow 0} f(x) = \lim_{x \rightarrow 0} -\frac{2}{(x+2)(x-1)} = -\frac{2}{(0+2)(0-1)} = -\frac{2}{-2} = 1$
6. $\lim_{x \rightarrow -3} f(x) = \lim_{x \rightarrow -3} -\frac{5x}{(x-2)} = -\frac{-15}{(-3-2)} = -\frac{-15}{-5} = -3$
7. $\lim_{x \rightarrow -4} f(x) = \lim_{x \rightarrow -4} -\frac{6}{(x-2)} = -\frac{6}{(-4-2)} = -\frac{6}{-6} = 1$
8. $\lim_{x \rightarrow 0} f(x) = \lim_{x \rightarrow 0} -\frac{(x+3)^2}{3} = -\frac{(0+3)^2}{3} = -\frac{9}{3} = -3$
9. $\lim_{x \rightarrow 3} f(x) = \lim_{x \rightarrow 3} -\frac{9(x-1)}{x^2} = -\frac{9(3-1)}{9} = -\frac{18}{9} = -2$
10. $\lim_{x \rightarrow 1} f(x) = \lim_{x \rightarrow 1} \frac{x^2(x+1)}{2(x-2)} = \frac{1(1+1)}{2(1-2)} = \frac{2}{-2} = -1$

CALCOLO DEL LIMITE PER LE FORME INDEFINITE

Studio di funzione razionale Periodo 3 - UdA 4

1. $\lim_{x \rightarrow -3} f(x) = 2 \quad f(0) = 1 \quad f(3) = 0 \quad \lim_{x \rightarrow \mp \infty} f(x) = \pm \infty$
2. $f(-2) = 0 \quad \lim_{x \rightarrow -1} f(x) = 1 \quad \lim_{x \rightarrow 0^{\mp}} f(x) = \pm \infty \quad \lim_{x \rightarrow 1^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = 0$
3. $f(-3) = 0 \quad \lim_{x \rightarrow -2} f(x) = -1 \quad f(0) = -9 \quad \lim_{x \rightarrow 1^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = 3$
4. $f(-2) = 0 \quad \lim_{x \rightarrow -1^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow 0} f(x) = 1 \quad f(1) = 0 \quad \lim_{x \rightarrow 2^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = 1$
5. $\lim_{x \rightarrow -2^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow 0} f(x) = 1 \quad \lim_{x \rightarrow 1^{\mp}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = 0$
6. $\lim_{x \rightarrow -3} f(x) = -3 \quad f(0) = 0 \quad \lim_{x \rightarrow 2^{\mp}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = -5$
7. $\lim_{x \rightarrow -4} f(x) = 1 \quad f(0) = 3 \quad \lim_{x \rightarrow 2^{\mp}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = 0$
8. $f(-3) = 0 \quad \lim_{x \rightarrow 0} f(x) = -3 \quad \lim_{x \rightarrow \infty} f(x) = -\infty$
9. $\lim_{x \rightarrow 0} f(x) = +\infty \quad f(1) = 0 \quad \lim_{x \rightarrow 3} f(x) = -2 \quad \lim_{x \rightarrow \infty} f(x) = 0$
10. $f(-1) = 0 \quad f(0) = 0 \quad \lim_{x \rightarrow 1} f(x) = -1 \quad \lim_{x \rightarrow 2^{\pm}} f(x) = \pm \infty \quad \lim_{x \rightarrow \infty} f(x) = +\infty$