factorización.

factor común.

$$a + a'x^2 + a'x^3 = \frac{a(a + ax^2 + ax^3)}{a}$$

$$a(1 + x^2 + x^3)$$

$$= a\left(\frac{a}{a} + \frac{ax^2}{a} + \frac{a}{a}x^3\right)$$

$$= a\left(1 + x^2 + x^3\right)$$

Diferencia de Cuadrados.

$$a^2 - b^2 = (a - b)(a + b)$$

$$= a^2 + ab - ab - b^2$$

$$= a^2 - b^2$$

Ej: $\quad x^2 - (\sqrt{4})^2 = x^2 - 2^2 = (x - 2)(x + 2)$

Trinomios.
$x^2 + bx + c$

$$x^2 + 2x + 1 = (x + 1)(x + 1)$$

$$= (x + 1)^2$$

T.C.P

$$x^2 + 2x + 1 = (x + 1)^2$$

$\sqrt{(1)^1} = x \quad \cdot 2 \cdot \sqrt{10^1} = 1 = 2x$

Trinomio $ax^2 + bx + c$

Ej: $12x^2 - x - 6$

$= \dfrac{12(12x^2 - x - 6)}{12}$
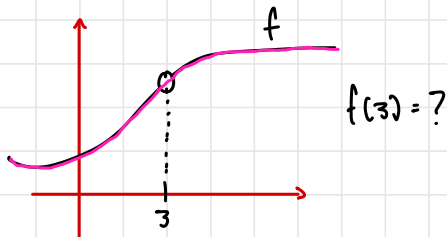
$= \dfrac{(12x)^2 - (12x) - 72}{12}$ $U = 12x$

tip: Siempre el número mayor va al primer factor.

$= \dfrac{U^2 - U - 72}{12} = \dfrac{(U - 9)(U + 8)}{12}$

$(3x + 2)$

$(4x - 3)$ $(6x + 4)$

$= \dfrac{(12x - 9)(12x + 8)}{12\,6\,3\,1}$

$(3x + 2)$

$(4x - 3)$ $(6x + 4)$

$\dfrac{(12x - 9)(12x + 8)}{12\,6\,3\,1}$

$= (4x - 3)(3x + 2)$

límites

$f(3) = ?$

① $\lim\limits_{x \to 3} \dfrac{x^2 - 3^2}{x - 3} = \dfrac{3^2 - 9}{3 - 3} = \dfrac{0}{0}$

Solución.

Diferencia Cuadrados

$\lim\limits_{x \to 3} \dfrac{(x - 3)(x + 3)}{(x - 3)}$

$\lim\limits_{x \to 3} x + 3 = (3) + 3 = 9$

② $\displaystyle\lim_{x \to 7} \frac{x-7}{3x^2 - 21x}$ T: 2 mn.

factor común y numérico.

$\displaystyle\lim_{x \to 7} \frac{x-7}{x(3x-21)}$

$3x - 21 \quad : \quad (x-7) \qquad = 3x - 21$

$\qquad\qquad\qquad\qquad\qquad = 3\cdot 1 \cdot x - 7\cdot 3$

$3\left(\dfrac{3x - 21/3}{3}\right) \qquad = 3(1\cdot x - 7)$

$\qquad\qquad\qquad\qquad\qquad = 3(x-7)$

$3(x - 7) = 3x - 21$

$\displaystyle\lim_{y \to 7} \frac{x-7}{x \cdot (3(x-7))}$

$\displaystyle\lim_{x \to 7} \frac{x-7}{3x(x-7)}$

$\displaystyle\lim_{x \to 7} \frac{1}{3\cdot x} = \frac{1}{3\cdot(7)} = \frac{1}{21} \; //\cdot$

③ $\displaystyle\lim_{x \to 8} \frac{3x^2 - 24x}{x^2 - 64}$

Solución.

$\displaystyle\lim_{x \to 8} \frac{x(3x - 24)}{x^2 - 64}$

Obs: $a^2 - b^2 = (a-b)(a+b)$

$\displaystyle\lim_{x \to 8} \frac{3x(x - 8)}{x^2 - 8^2} = \lim_{x \to 8} \frac{3x(x-8)}{(x-8)(x+8)} = \lim_{x \to 8} \frac{3x}{x + 8}$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad = \frac{3(8)}{3 + 8} = \frac{24}{11}$

4. $\lim\limits_{x \to 4} \dfrac{x^2 - 16}{x^2 + 2x - 24}$

Solvan:.

$x^2 + 2x - 24 = (x+6)(x-4)$

$\lim\limits_{x \to 4} \dfrac{(x-4)(x+4)}{(x+6)(x-4)}$

$\lim\limits_{x \to 4} \dfrac{x+4}{x+6} = \dfrac{4+4}{4+6} = \dfrac{8}{10} = \dfrac{4}{5}$ //.

5. $\lim\limits_{x \to 5} \dfrac{x^2 - 25}{2x^2 - 12x + 10}$

Diferenn Cuadrados.

$\lim\limits_{x \to 5} \dfrac{(x-5)(x+5)}{\cancel{(2x-10)}(2x-2)}$
$ \overset{2}{\cancel{(x-5)}}$

$\lim\limits_{x \to 5} \dfrac{(x+5)}{(2x-2)} = \dfrac{5+5}{2(5)-2} = \dfrac{10}{8} = \dfrac{5}{4}$ /.

Tarea:

→ factorizar Suma / Resta de Cubos. Investigar.

1. $\lim\limits_{x \to -1/2} \dfrac{8x^3 + 1}{2x + 1}$

2. $\lim\limits_{x \to -3} \dfrac{x^2 + 8x + 15}{x^2 - x - 12}$

3. $\lim\limits_{x \to 5} \dfrac{2x^2 - 13x + 15}{x^2 - x - 20}$