1. p014e01y3 - Comprueba si son equivalentes las siguientes fracciones algebraicas:

   (a) $\frac{x^2-1}{x+3}$ y $\frac{x^3+2x^2-x-2}{x^2+5x+6}$

   Sol: $\frac{(-x+(x^3+2x^2))-2}{(x^2+5x)+6} - \frac{x^2-1}{x+3} = 0$

   (b) $\frac{x^2-4}{x^2-2x}$ y $\frac{x+2}{x}$

   Sol: $-\frac{x^2-4}{x^2-2x} + \frac{x+2}{x} = 0$

2. p014e04 - Obtén la fracción irreducible (simplifica) equivalente a las fracciones algebraicas:

   (a) $\frac{2x^3-5x^2-23x-10}{x^3+3x^2-4x-12}$

   Sol: $\frac{2x^2-9x-5}{x^2+x-6}$

   (b) $\frac{x^3-16x}{x^3+3x^2-4x}$

   Sol: $\frac{x-4}{x-1}$

   (c) $\frac{x^2+3x-4}{x^3-x}$

   Sol: $\frac{x+4}{x^2+x}$

   (d) $\frac{x^3-1}{x^2-x}$

   Sol: $\frac{x^2+x+1}{x}$

3. p015e05 - Simplifica las siguientes fracciones algebraicas:

   (a) $\frac{x^2-9}{x+3}$

   Sol: $x-3$

   (b) $\frac{x^2-1}{x^3-x}$

   Sol: $\frac{1}{x}$

   (c) $\frac{x^4-4x^2+4}{x^4-4}$

   Sol: $\frac{x^2-2}{x^2+2}$

   (d) $\frac{3x^2+x}{3x^3+x^2-12x-4}$

   Sol: $\frac{3x}{3x^2-12}$

   (e) $\frac{2x^3+3x^2-8x+3}{2x^3-x^2-2x-1}$

   Sol: $\frac{2x^3+3x^2-8x+3}{2x^3-x^2-2x-1}$

   (f) $\frac{x^3-5x^2+6x}{x^3-4x}$

   Sol: $\frac{x-3}{x+2}$

   (g) $\frac{2x-5}{2x^3-5x^2-2x+5}$

   Sol: $\frac{2}{2x^2-2}$

   (h) $\frac{x-2}{x^2-4}$

   Sol: $\frac{1}{x+2}$

   (i) $\frac{x^2-2}{x-\sqrt{2}}$

   Sol: $x+\sqrt{2}$

   (j) $\frac{x^2+2x+1}{x^2-1}$

   Sol: $\frac{x+1}{x-1}$

   (k) $\frac{x^3-2x^2-5x+6}{x^2+x-2}$

   Sol: $x-3$

4. p015e07 - Calcula, simplificando el resultado:

(a) $\frac{2}{x+7} + \frac{x+4}{x-7}$

Sol: $\frac{x^2+13x+14}{x^2-49}$

(b) $\frac{1}{x+5} + \frac{x}{x^2+10x+25}$

Sol: $\frac{2x+5}{x^2+10x+25}$

(c) $\frac{1}{x+5} - \frac{x}{x^2+10x+25}$

Sol: $\frac{5}{x^2+10x+25}$

(d) $\frac{12}{x-3} + \frac{x+4}{2x+1} - \frac{x}{x^2-6x+9}$

Sol: $\frac{x^3+20x^2-76x}{2x^3-11x^2+12x+9}$

(e) $\frac{1}{x-1} \cdot \frac{x^2-1}{x+2} \cdot \frac{x+2}{x-3}$

Sol: $\frac{x+1}{x-3}$

(f) $\frac{2x+1}{x} \cdot \frac{x^2-3x}{4x^2-1}$

Sol: $\frac{2x-6}{4x-2}$

(g) $\frac{3x-1}{x} \cdot \frac{x^2}{9x^2-1}$

Sol: $\frac{3x}{9x+3}$

(h) $7x : \frac{x^2-4x}{x-2}$

Sol: $\frac{7x-14}{x-4}$

(i) $\frac{x-3}{x-1} : \frac{x^2-3x}{x^2-1}$

Sol: $\frac{x+1}{x}$

(j) $\frac{x^2-3x-4}{x} : \frac{x+1}{x^2+2x}$

Sol: $x^2 - 2x - 8$

5. p015e09 - Efectúa simplificando el resultado si es posible:

(a) $\frac{x}{x+1} + \frac{3x}{x^2-1} - \frac{1}{x-1}$

Sol: $\frac{x^2+x-1}{x^2-1}$

(b) $\frac{x}{x^2-5x+6} + \frac{2}{x-3} - \frac{3}{x-2}$

Sol: $\frac{5}{x^2-5x+6}$

(c) $\frac{2}{x-2} + \frac{1}{x+2} - \frac{x-1}{x^2-4}$

Sol: $\frac{2x+3}{x^2-4}$

(d) $\frac{x}{x^2-9x+20} - \frac{1}{x^2-11x+30} + \frac{2}{x^2-10x+24}$

Sol: $\frac{x+1}{x^2-9x+20}$

(e) $\frac{x^2+3x+2}{x^2-3x+2} \cdot \frac{x^2-1}{x^2-x-6}$

Sol: $\frac{x^2+2x+1}{x^2-5x+6}$

(f) $\frac{3x-2}{10x+4} \cdot \frac{4x}{6x-4}$

Sol: $\frac{x}{5x+2}$

(g) $\frac{3x^2+5x-2}{x^4+2x^2-15} : \frac{9x^2-6x+1}{x^4+5x^2}$

Sol: $\frac{3x^3+6x^2}{9x^3-3x^2-27x+9}$

(h) $\frac{x}{x^2+5x+6} - \frac{2}{x+2} + \frac{3}{x+3}$

Sol: $\frac{2x}{x^2+5x+6}$

(i) $\frac{x^2-2x-3}{x^2-5x} \cdot \frac{x^2-4x-5}{x^2-4x+3}$

Sol: $\frac{x^2+2x+1}{x^2-x}$

(j) $\frac{x^2-4}{x^3-x^2+3x-3} : \frac{x^2-3x+2}{x^3+3x}$

Sol: $\frac{x^2+2x}{x^2-2x+1}$

(k) $\frac{x}{x^2-2x+1} - \frac{x-3}{x^2-x}$

Sol: $\frac{4x-3}{x^3-2x^2+x}$

(l) $\frac{x+1}{x^2-4} + \frac{2x-1}{x^2+2x} + \frac{3x-2}{x^2-2x}$

Sol: $\frac{6x^2-2}{x^3-4x}$

(m) $\frac{\frac{x+1}{x^2}}{\frac{x^2-1}{x^3}}$

Sol: $\frac{x}{x-1}$

(n) $\left(\frac{1}{x^2-1}\right) : \frac{1}{\frac{1}{1+x^2}+\frac{2x^2}{1-x^4}}$

Sol: $-\frac{1}{x^4-2x^2+1}$

(ñ) $\frac{x}{1+\frac{1}{1+\frac{1}{x}}}$

Sol: $\frac{x^2+x}{2x+1}$

(o) $\frac{\frac{1}{x-2}-\frac{1}{x+2}}{1-\frac{4}{x^2-4}}$

Sol: $\frac{4}{x^2-8}$

(p) $\frac{1}{\frac{x+1}{x-1}-\frac{x-1}{x+1}}$

Sol: $\frac{x^2-1}{4x}$

(q) $(x^3+x) : \left(1 - \frac{2x}{2x+\frac{2}{x}}\right)$

Sol: x^5+2x^3+x

(r) $\left(\frac{1}{x}-\frac{1}{x+1}\right)\left(x-\frac{x+1}{x-1}\right)$

Sol: $\frac{x^2-2x-1}{x^3-x}$

(s) $\frac{1}{x}\left(\frac{2}{x}-\frac{3}{x+1}\right) - \frac{x+1}{x}\left(3-\frac{4}{x+1}\right)$

Sol: $-\frac{3x^3+2x^2-2}{x^3+x^2}$

(t) $\frac{\frac{x-1}{x+2}-\frac{x+2}{x-1}}{1-\frac{1}{x-1}}$

Sol: $-\frac{6x+3}{x^2-4}$