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Tarea 10

1. $\frac{-3x}{x^2+x-2}$ $(x+2)(x-1)$ (A, B)

$\frac{-2}{x+2} + \frac{-1}{x-1}$

$-3x = Ax - A + Bx + 2B$

$x \to -3 = A + B$

$x^0 \to 0 = -A + 2B$

$-3 = 3B$

$A = -2$

$B = -1$

2. $\frac{-3x-1}{x^2+x}$ (x) (A) $(x+1)$ (B)

$\frac{-1}{x} + \frac{-2}{x+1}$

$-3x - 1 = Ax + A + Bx$

$x \to -3 = A + B$

$x^0 \to -1 = A$

$A = -1$

$B = -2$

3. $\frac{4x-9}{x^2-3x}$ (x) (A) $(x-3)$ (B)

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

$4x - 9 = Ax - 3A + Bx$

$x \to 4 = A + B$

$x^0 \to -9 = -3A$

$A = 3$

$B = 1$

4. $\frac{x+3}{x^3+x^2}$ (x) (A) (x^2) (B) $(x+1)$ (C) x^2+x

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

$x + 3 = Ax^2 + Ax + Bx + B + Cx^2$

$x^2 \to 0 = A + C$

$x \to 1 = A + B$

$x^0 \to 3 = B$

$A = -2$

$B = 3$

$C = 2$

5. $\frac{x+1}{(x+2)(x+3)}$

$\frac{-1}{x+2} + \frac{2}{x+3}$

$x + 1 = Ax + 3A + Bx + 2B$

$x \to (1 = A + B) - 2$

$x^0 \to 1 = 3A + 2B$

$-2 = -2A - 2B$

$-1 = A$

$2 = B$

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6. $\frac{4}{x(x-4)}$

$4 = Ax - 4A + Bx$

$x \to A + B = 0$ $\quad A = -1$

$x^0 \to -4A = 4$ $\quad B = 1$

$\frac{-1}{x} + \frac{1}{x-4}$

7. $\frac{-x-7}{x^2+5x+6}$ $\quad \overset{A}{(x+3)}\ \overset{B}{(x+2)}$

$\frac{4}{x+3} + \frac{-5}{x+2}$

$-x-7 = Ax + 2A + Bx + 3B$

$x \to -1 = A + B$) -2 $\quad A = 4$

$x^0 \to -7 = 2A + 3B$ $\quad B = -5$

$2 = -2A - 2B$

$-5 = B$

8. $\frac{x^2-3x+36}{x^3-6x^2+9x}$ $\quad \overset{A}{(x)}\ \overset{B}{(x-3)}\ \overset{C}{(x-3)^2}$

$x^2 - 3x + 36 = Ax^2 - 6Ax + 9A + Bx^2 - 3Bx + Cx$

$x^2 \to 1 = A + B$ $\quad A = 4$

$x \to -3 = -6A - 3B + C$ $\quad B = -3$

$x^0 \to 36 = 9A$ $\quad C = 12$

$-24 + 9 + C$

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

9. $\frac{15x}{(x+1)(x-2)}$

$15x = Ax - 2A + Bx + B$

$(x \to A + B = 15)\ 2$ $\quad A = 5$

$x^0 \to -2A + B = 0$ $\quad 3B = 30$ $\quad B = 10$

$2A + 2B = 30$

$\frac{5}{x+1} + \frac{10}{x-2}$

10. $\frac{2x-9}{x(x+3)}$

$2x - 9 = Ax + 3A + Bx$

$x \to 2 = A + B$ $\quad A = -3$

$x^0 \to -9 = 3A$ $\quad B = 5$

$\frac{-3}{x} + \frac{5}{x+3}$

11. $\frac{-x+12}{x^2-4x}$ $\quad \overset{A}{(x)}\ \overset{B}{(x-4)}$

$\frac{-3}{x} + \frac{2}{x-4}$

$-x + 12 = Ax - 4A + Bx$

$x \to -1 = A + B$ $\quad A = -3$

$x^0 \to 12 = -4A$ $\quad B = 2$

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12. $\frac{-2}{x^3-x^2}$ $\quad \overset{A}{(x)}\ \overset{B}{(x^2)}\ \overset{C}{(x-1)}$

$-2 = Ax^2 - Ax + Bx - B + Cx^2$

$x^2 \rightarrow A + C = 0 \qquad A = 2$

$x \rightarrow -A + B = 0 \qquad B = 2$

$x^0 \rightarrow -B = -2 \qquad C = -2$

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

13. $\frac{5}{(x-1)(x-2)}$

$5 = Ax - 2A + Bx - B$

$x \rightarrow A + B = 0 \qquad A = -5$

$x^0 \rightarrow -2A - B = 5 \qquad B = 5$

$-A = 5$

$\frac{-5}{x-1} + \frac{5}{x-2}$

14. $\frac{-2x+16}{x^3-2x^2}$ $\quad \overset{A}{(x)}\ \overset{B}{(x^2)}\ \overset{C}{(x-2)}$

$-2x + 16 = Ax^2 - 2Ax + Bx - 2B + Cx^2$

$x^2 \rightarrow A + C = 0 \qquad A = -3$

$x \rightarrow -2A + B = -2 \qquad B = -8$

$x^0 \rightarrow -2B = 16 \qquad C = 3$

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

15. $\frac{x^2-9x+27}{x^3+3x^2}$ $\quad \overset{A}{(x)}\ \overset{B}{(x^2)}\ \overset{C}{(x+3)}$

$x^2 - 9x + 27 = Ax^2 + 3Ax + Bx + 3B + Cx^2$

$x^2 \rightarrow 1 = A + C \qquad A = -6$

$x \rightarrow -9 = +3A + B \qquad B = 9$

$x^0 \rightarrow 27 = 3B \qquad C = 7$

$\frac{-6}{x} + \frac{9}{x^2} + \frac{7}{x+3}$