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Tarea 3

$$1) \lim_{x \rightarrow \infty} \frac{7x+8}{4x+3} = \frac{\frac{7x}{x} + \frac{8}{x}}{\frac{4x}{x} + \frac{3}{x}} = \lim_{x \rightarrow \infty} \frac{7}{4}$$

$$2) \lim_{x \rightarrow \infty} \frac{2x^2 - 3x + 5}{x^2 - 5x + 2} = \frac{\frac{2x^2}{x^2} - \frac{3x}{x^2} + \frac{5}{x^2}}{\frac{x^2}{x^2} - \frac{5x}{x^2} + \frac{2}{x^2}} = \lim_{x \rightarrow \infty} \frac{2}{1} = 2$$

$$3) \lim_{x \rightarrow \infty} \frac{3x^2 + 5x - 2}{5x^3 + 4x^2 + 1} = \frac{\frac{3x^2}{x^2} + \frac{5x}{x^2} - \frac{2}{x^2}}{\frac{5x^3}{x^2} + \frac{4x^2}{x^2} + \frac{1}{x^2}} = \lim_{x \rightarrow \infty} \frac{5}{4}$$

$$4) \lim_{x \rightarrow \infty} \frac{5x^4 - 2x^2 + 3}{3x^3 + 2x^2 + x} = \frac{\frac{5x^4}{x^3} - \frac{2x^2}{x^3} + \frac{3}{x^3}}{\frac{3x^3}{x^3} + \frac{2x^2}{x^3} + \frac{x}{x^3}} = \lim_{x \rightarrow \infty} \frac{5}{3} = 1$$

$$5) \lim_{x \rightarrow \infty} \sqrt{\frac{17x^2 - 3x + 2}{2x^2 + 5}} = \sqrt{\frac{\frac{17x^2}{x^2} - \frac{3x}{x^2} + \frac{2}{x^2}}{\frac{2x^2}{x^2} + \frac{5}{x^2}}} = \lim_{x \rightarrow \infty} \sqrt{\frac{17}{2}} = \sqrt{\frac{17}{2}}$$

$$6) \lim_{x \rightarrow \infty} \frac{\sqrt[3]{x^3 - 2x^2 + 3}}{2x + 1} = \frac{\sqrt[3]{\frac{x^3}{x^3} - \frac{2x^2}{x^3} + \frac{3}{x^3}}}{\frac{2x}{x} + \frac{1}{x}} = \lim_{x \rightarrow \infty} \frac{1}{2} = \frac{1}{2}$$

$$7) \lim_{x \rightarrow \infty} \frac{3 + 4^3 - 34^4}{9x^4 - 5 - 3} = \text{Indeterminado}$$

$$8) \lim_{x \rightarrow \infty} \frac{2x^{-1} + 3x^{-2}}{x^{-2} + 4} = \frac{\frac{2}{x} + \frac{3}{x^2}}{\frac{1}{x^2} + 4} = \lim_{x \rightarrow \infty} \frac{2x + 3}{1 + 4x^2} = 0$$

$$9) \lim_{x \rightarrow \infty} \frac{\sqrt{x^2 + 1}}{\sqrt{x^3 - 3}} = 0$$

$$10) \lim_{x \rightarrow \infty} \frac{\sqrt{x^2 + 4} - \sqrt{x^2 - 4}}{x} = \text{Indeterminado}$$

$$11) \lim_{x \rightarrow \infty} \frac{11x + 6}{4 - 6x} = \frac{\frac{11x}{x} + \frac{6}{x}}{\frac{4}{x} - \frac{6x}{x}} = \lim_{x \rightarrow \infty} \frac{11}{-6} = -\frac{11}{6}$$

$$12) \lim_{x \rightarrow \infty} \frac{x}{\sqrt{x^2 - 4}} = 0$$

$$13) \lim_{x \rightarrow \infty} \frac{(3x-2)(3x+1)}{(2x+7)(x-2)} = \frac{\frac{9x^2 - 2}{x^2 - \cancel{x^2}}}{\frac{2x^2 - 14x}{x^2 - \cancel{x^2}}} = \lim_{x \rightarrow \infty} \frac{9}{2}$$

$$14) \lim_{x \rightarrow \infty} \frac{2^x - 2^{-x}}{2^x + 2^{-x}} = \frac{\frac{2^x}{2^x} - \frac{2^{-x}}{2^x}}{\frac{2^x}{2^x} + \frac{2^{-x}}{2^x}} = \lim_{x \rightarrow \infty} \frac{1 - 2^{-2x}}{1 + 2^{-2x}} = 1$$

$$15) \lim_{x \rightarrow \infty} \frac{x^2 - 5x + 3}{\sqrt{x^4 - 2x^2 - 1}} = \frac{\frac{x^2}{x^2} - \frac{5x}{x^2} + \frac{3}{x^2}}{\frac{\sqrt{x^4}}{x^2} - \frac{\sqrt{2x^2}}{x^2} - \frac{\sqrt{1}}{x^2}} = \lim_{x \rightarrow \infty} \frac{5}{\sqrt{1}}$$