5 p,

$a = \sqrt[3]{x-2} \quad b = 1$

$a^2 + ab + b^2 = (\sqrt[3]{x-2})^2 + \sqrt[3]{x-2} + 1$

$$\lim_{x \to 1} \frac{\sqrt{5x+4}-3}{\sqrt[3]{x-2}+1} \cdot \frac{(\sqrt{5x+4}+3)}{(\sqrt{5x+4}+3)} \cdot \frac{((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}$$

$$\frac{((\sqrt{5x+4})^2 + 3\sqrt{5x+4} - 3\sqrt{5x+4} - 9) \cdot ((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{((\sqrt[3]{x-2})^3 + (1)^3) \cdot (\sqrt{5x+4}+3)}$$

$$\frac{(5x+4-9) \cdot ((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{(x-2+1) \cdot (\sqrt{5x+4}+3)}$$

$$\frac{(5x-5) \cdot ((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{(x-1)(\sqrt{5x+4}+3)}$$

$$\frac{5\cancel{(x-1)} \cdot ((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{\cancel{(x-1)} \cdot (\sqrt{5x+4}+3)}$$

$$\frac{5((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{(\sqrt{5x+4}+3)} = \frac{5((\sqrt[3]{-1})^2 - \sqrt[3]{-1}+1}{\sqrt{5\cdot(1)+4}+3} = \frac{15}{6} \begin{matrix} :3 \\ :3 \end{matrix}$$

$$\lim_{x \to 1} \frac{\sqrt{5x+4}-3}{\sqrt[3]{x-2}+1} = \lim_{x \to 1} \frac{5((\sqrt[3]{x-2})^2 - \sqrt[3]{x-2}+1)}{(\sqrt{5x+4}+3)} = \frac{5}{2}$$

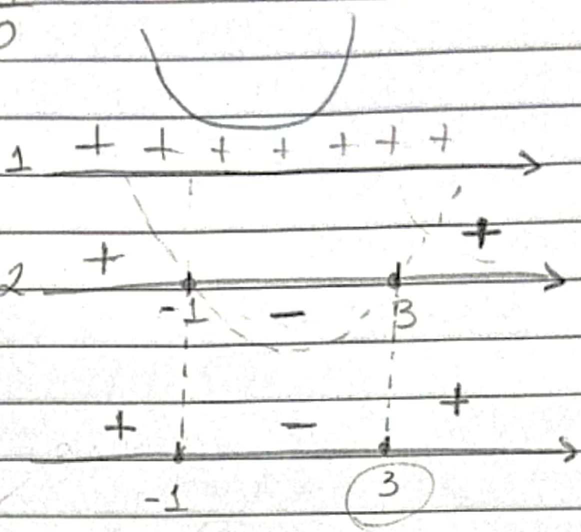
13i $\lim_{x \to 3} \frac{x^2 + x + 2^{(1)}}{x^2 - 2x - 3^{(2)}} = \frac{14}{0}$

P1

$\Delta = b^2 - 4ac$

$\Delta = 1 - 8$

$\Delta = -7$



P2

$\Delta = (-2)^2 - 4 \cdot (1) \cdot (-3)$ $\qquad \frac{-b \pm \sqrt{\Delta}}{2 \cdot a}$

$\Delta = 4 + 12$ $\qquad \frac{+2 \pm 4}{2}$

$\Delta = 16$

$x' = 3$

$x'' = -1$

$\lim_{x \to 3} \frac{x^2 + x + 2}{x^2 - 2x - 3} = \nexists$

15m, $\lim_{x \to \infty} \frac{(\sqrt{3x^2 + 2x + 1} - \sqrt{2x})}{1} \cdot \frac{(\sqrt{3x^2 + 2x + 1} + \sqrt{2x})}{(\sqrt{3x^2 + 2x + 1} + \sqrt{2x})}$

$\frac{(\sqrt{3x^2 + 2x + 1})^{\cancel{2}} - (\sqrt{2x})^{\cancel{2}}}{(\sqrt{3x + 2x + 1}) + (\sqrt{2x})} \Rightarrow \lim_{x \to +\infty} \frac{3x^2 \cancel{+2x} + 1 \cancel{-2x}}{\sqrt{3x + 2x + 1} + \sqrt{2x}}$

$\lim_{x \to +\infty} \frac{3x^2 + 1}{\sqrt{3x^2 + 2x + 1} + \sqrt{2x}} \Rightarrow \frac{\frac{3x^2 + 1}{x}}{\frac{\sqrt{3x^2 + 2x + 2} + \sqrt{2x}}{x}}$

$\lim_{x \to +\infty} \frac{3x + \frac{1}{x}}{\frac{\sqrt{3x^2 + 2x + 1}}{x} + \frac{\sqrt{2x}}{x}} = \lim_{x \to +\infty} \frac{3x + \frac{1}{x}}{\frac{\sqrt{3x^2 + 2x + 1}}{\sqrt{x^2}} + \frac{\sqrt{2x}}{\sqrt{x^2}}}$

$$\lim_{x \to +\infty} \frac{3x + \frac{1}{x}}{\sqrt{\frac{3x^2+2x+1}{x^2}} + \sqrt{\frac{2x}{x^2}}}$$

$$\lim_{x \to +\infty} \frac{3x + \frac{1}{x}}{\sqrt{3 + \frac{2}{x} + \frac{1}{x^2}} + \sqrt{\frac{2}{x}}} = \frac{\lim_{x \to +\infty} 3x + \frac{1}{x}}{\sqrt{\lim_{x \to +\infty} 3 + \frac{2}{x} + \frac{1}{x^2}} + \sqrt{\lim_{x \to +\infty} \frac{2}{x}}} =$$

$$\frac{3x + \cancel{\frac{1}{x}}}{\sqrt{3 + \cancel{\frac{2}{+\infty}} + \cancel{\frac{1}{+\infty}}} + \sqrt{\cancel{\frac{2}{+\infty}}}} = \frac{+\infty}{\sqrt{3}} = +\infty$$

16d) $f(x) = \frac{-2}{\sqrt{x-3}}$; $\sqrt{x-3} = 0 \Rightarrow x-3 = 0 \Rightarrow x = 3$

$\lim_{x \to 3^+} \frac{-2}{\sqrt{x-3}} \Rightarrow \frac{-2}{0^+} = -\infty$ A assíntota vertical da função é $x = 3$

$$\lim_{x \to +\infty} \frac{-2}{\sqrt{x-3}} = \frac{\lim_{x \to +\infty} -2}{\sqrt{\lim_{x \to +\infty} x - 3}} = \frac{-2}{+\infty} = 0$$

$$\lim_{x \to -\infty} \frac{-2}{\sqrt{x-3}} = \frac{\lim_{x \to -\infty} -2}{\sqrt{\lim_{x \to -\infty} x - 3}} = \frac{-2}{-\infty} = 0$$

A assíntota horizontal da função é $y = 0$