

Oef 2 (c) pA.14

SA in $-\infty$

$$f(x) = \sqrt{\frac{x^4 - x^3}{3x^2}}$$

$$a = \lim_{x \rightarrow -\infty} \frac{\sqrt{\frac{x^4 - x^3}{3x^2}}}{x}$$

$$= \lim_{x \rightarrow -\infty} \frac{\sqrt{\frac{x^2 - x}{3}}}{x} \quad \begin{matrix} +\infty \\ -\infty \end{matrix} = \text{ONB}$$

$$= \lim_{x \rightarrow -\infty} \frac{-x \sqrt{\frac{1 - 1/x}{3}}}{x} \quad \begin{matrix} \sqrt{x^2} = -x \\ x = -\infty \end{matrix}$$

$$= -\sqrt{\frac{1}{3}} = -\frac{1}{\sqrt{3}} \in \mathbb{R}_0$$

$$b = \lim_{x \rightarrow -\infty} \left(\sqrt{\frac{x^2 - x}{3}} + \frac{x}{\sqrt{3}} \right) \quad \begin{matrix} +\infty - \infty \\ = \text{ONB} \end{matrix}$$

$$= \frac{1}{\sqrt{3}} \lim_{x \rightarrow -\infty} \left(\sqrt{x^2 - x} + x \right) \frac{\left(\sqrt{x^2 - x} - x \right)}{\sqrt{x^2 - x} - x}$$

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

$$= \frac{1}{\sqrt{3}} \lim_{x \rightarrow -\infty} \frac{-x}{x \left(-\sqrt{1 - \frac{1}{x}} - 1 \right)}$$

$$= \frac{1}{\sqrt{3}} \cdot \frac{-1}{-2} = \frac{1}{2\sqrt{3}}$$

$$\Rightarrow \text{SA in } -\infty : y = -\frac{1}{\sqrt{3}}x + \frac{1}{2\sqrt{3}}$$