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$\boxed{V1}$

$y = x(x-1)^{3/2}$ $\quad D(f): x \geq 1$

$y' = (x-1)^{3/2} + \frac{3}{2}x(x-1)^{\frac{1}{2}}$

$y' = (x-1)^{\frac{1}{2}} \cdot (x - 1 + \frac{3}{2}x)$ $\quad \boxed{\text{increases on } D(f)}$

$y' = (x-1)^{\frac{1}{2}} \cdot (\frac{5}{2}x - 1)$ $\quad + \quad - \quad +$

$y' = 0 \quad x = \frac{2}{5} \notin D(f)$ $\quad \frac{2}{5} \quad 1$

$x = 1$

$\boxed{x_0 = 1 \text{ - local minimum}}$

$y'' = \frac{1}{2}(x-1)^{-\frac{1}{2}}(\frac{5}{2}x - 1) + \frac{5}{2}(x-1)^{\frac{1}{2}}$

$y'' = \dfrac{\frac{5}{2}x - 1}{2(x-1)^{\frac{1}{2}}} + \dfrac{5(x-1)^{\frac{1}{2}}}{2}$

$y'' = \dfrac{\frac{5}{2}x - 1 + 5x - 5}{2(x-1)^{1/2}} = \dfrac{\frac{15x}{2} - 6}{2(x-1)^{1/2}} = \dfrac{15x - 12}{4(x-1)^{\frac{1}{2}}}$

$y'' = 0 \quad x = \frac{4}{5}$ $\quad - \quad +$

$\notin D(f)$ $\quad$ convex $\quad \frac{4}{5} \quad$ concave. $\quad \boxed{\text{Concave on } D(f)}$

- inflexion point

$\lim\limits_{x \to 1} x(x-1)^{3/2} = 0 \Rightarrow$ no vertical asymptotes

$\lim\limits_{x \to \infty} x(x-1)^{\frac{3}{2}} = x^{\infty} \infty \Rightarrow$ no horizontal asymptote

$\lim\limits_{x \to \infty} \dfrac{x(x-1)^{\frac{3}{2}}}{x} = \lim\limits_{x \to \infty} (x-1)^{\frac{3}{2}} = \infty \Rightarrow$ no line asymptote.