

156)

$$y = \frac{2x^2}{x-2}$$

as $x=0: y = \frac{0}{-2} = 0 \Rightarrow (0,0)$

y=0: $\frac{2x^2}{x-2} = 0$

$$2x^2 = 0$$

x=0 \Rightarrow Only cuts at (0,0)

metry $\frac{2(-x)^2}{(-x)-2} = \frac{2x^2}{-x-2} = \frac{2x^2}{-(x+2)}$

$f(-x) \neq \pm f(x) \Rightarrow$ Not odd/even so No Symmetry

x/Min $y = \frac{2x^2}{x-2}$
pts

$$\begin{array}{r}
 2x + 4 \\
 \hline
 x-2 \overline{) 2x^2 + 0x + 0} \\
 \underline{2x^2 - 4x} \\
 4x \\
 \underline{4x - 8} \\
 8
 \end{array}$$

$y = 2x + 4 + \frac{8}{(x-2)}$

$$y = 2x + 4 + 8(x-2)^{-1}$$

$$\frac{dy}{dx} = 2 - 8(x-2)^{-2}$$

Stat pts $\frac{dy}{dx} = 0 \Rightarrow 2 - \frac{8}{(x-2)^2} = 0$

$$2 = \frac{8}{(x-2)^2}$$

$$(x-2)^2 = 4$$

$$(x-2) = \pm 2$$

$$x = 2 \pm 2$$

\therefore 2 stat pts at x=0 & x=4

$$y = \frac{2x^2}{x-2}$$

var pts

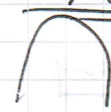
$$\underline{x=0} : y = \frac{0}{-2} = \underline{0} \Rightarrow \underline{(0,0)}$$


$$\underline{x=4} : y = \frac{2(4)^2}{4-2} = \frac{32}{2} = \underline{16} \Rightarrow \underline{(4,16)}$$

ature

$$\frac{dy}{dx} = 2 - 8(x-2)^{-2}$$

$$\frac{d^2y}{dx^2} = 16(x-2)^{-3} = \frac{16}{(x-2)^3}$$

at $x=0$: $\frac{d^2y}{dx^2} = \frac{16}{(0-2)^3} = \frac{16}{-8} < 0 \Rightarrow$  Max(0,0)

at $x=4$: $\frac{d^2y}{dx^2} = \frac{16}{(4-2)^3} = \frac{16}{8} > 0 \Rightarrow$  Min(4,16)

PI $\frac{d^2y}{dx^2} = 0 \Rightarrow \frac{16}{(x-2)^3} = 0$

$16 \neq 0 \Rightarrow$ No POI

remes of
ruptures

$$y = \frac{2x^2}{x-2} \quad \text{or} \quad y = 2x + 4 + \frac{8}{x-2}$$

Vertical at $x-2=0$
(Undefined) $\underline{\underline{x=2}}$

$x \rightarrow 2^+$	$y \rightarrow +\infty$
$x \rightarrow 2^-$	$y \rightarrow -\infty$

Non-Horizontal ($x \rightarrow \pm\infty$)

$x \rightarrow +\infty$	$y \rightarrow (2x+4)^+$
$x \rightarrow -\infty$	$y \rightarrow (2x+4)^-$

Summary Max (0,0) ; Min (4,16)
Asymptotes at $x=2$ & $y=2x+4$

