(10) $y = \dfrac{(x+1)^2}{x-1} \quad \begin{matrix} u \\ v \end{matrix}$

$$\frac{dy}{dx} = \frac{(x-1)2(x+1)1 - (x+1)^2 1}{(x-1)^2}$$

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

$$= \frac{2x^2 + \cancel{2x} - \cancel{2x} - 2 - x^2 - 2x - 1}{(x-1)^2}$$

$$\frac{dy}{dx} = \boxed{\frac{x^2 - 2x - 3}{(x-1)^2}} \quad \text{or} \quad \frac{(x+1)(x-3)}{(x-1)^2}$$

Remember $\dfrac{dy}{dx} = 0 \quad \therefore \quad \dfrac{(x+1)(x-3)}{(x-1)^2} = 0$

Multiple both side by $(x-1)^2$

$$\cancel{(x-1)^2}\,\frac{(x+1)(x-3)}{\cancel{(x-1)^2}} = 0\,(x-1)^2$$

$$(x+1)(x-3) = 0$$

$$x+1 = 0 \qquad x-3 = 0$$

$$\boxed{x = -1} \qquad \boxed{x = 3}$$

$$\frac{d^2y}{dx^2} = \frac{(x-1)^2(2x-2) - (x^2-2x-3)2(x-1)(1))}{((x-1)^2)^2}$$

Substituting $x = -1$ Substituting $x = 3$

$$\frac{((-1)-1)^2(2(-1)-2) - ((-1)^2-2(-1)-3)2((-1)-1)(1)}{(((-1)-1)^2)^2} = \frac{-16}{16} \quad -1 \quad \text{MAX}$$

$$\frac{(3-1)^2(2(3)-2) - ((3^2-2(3)-3)2((3)-1)1}{((3-1)^2)2} = \frac{16}{16} \quad +1 \quad \text{MIN}$$

To find the exact x and y coordinates find f(-1) and f(3). This will provide the y values hence you have the local maximum and local minimum points.

Maximum is (-1, 0) and minimum is (3, -8)