10. $f(x) = \dfrac{x^2}{x^2-5}$ $[-2, 4]$

(1) $P = x^2 \quad P' = 2x$ $\quad Q = x^2-5 \quad Q' = 2x$

$$\frac{P'Q - PQ'}{Q^2}$$

$$f'(x) = \frac{2x(x^2-5) - x^2(2x)}{(x^2-5)^2}$$

$$= \frac{2x[x^2-5-x^2]}{(x^2-5)^2}$$

$$f'(x) = \frac{-10x}{(x^2-5)^2}$$

(2) $-10x = 0$

$x = 0$

$(x^2-5)^2 = 0$

$x^2 - 5 = 0$

$x^2 = 5$

$x = \pm\sqrt{5}$

$x = -\sqrt{5}$ $\quad x = \sqrt{5}$

(3)

$x = -2$

$y = \dfrac{x^2}{x^2-5}$

$y = \dfrac{(-2)^2}{(-2)^2-5}$

$= \dfrac{4}{4-5}$

$= \dfrac{4}{-1}$

$y = -4$

$x = 0$

$y = \dfrac{x^2}{x^2-5}$

$y = \dfrac{0^2}{0^2-5}$

$y = 0$

$x = \sqrt{5}$

$y = \dfrac{x^2}{x^2-5}$

$y = \dfrac{(\sqrt{5})^2}{(\sqrt{5})^2-5}$

$= \dfrac{5}{5-5}$

= UNDEF

$x = 4$

$y = \dfrac{x^2}{x^2-5}$

$y = \dfrac{4^2}{4^2-5}$

$= \dfrac{16}{16-5}$

$= \dfrac{16}{11}$

ABS. MIN: $(-2, -4)$

ABS. MAX: $(4, \frac{16}{11})$