12. $f(x) = x^2 + \frac{2}{x}$

$\qquad = x^2 + 2x^{-1}$

① $f'(x) = 2x - 2x^{-2}$

$\qquad = \frac{2x}{1} - \frac{2}{x^2}$

$\qquad = \frac{2x^3}{x^2} - \frac{2}{x^2}$

$\qquad = \frac{2x^3 - 2}{x^2}$

② $2x^3 - 2 = 0 \qquad x^2 = 0$

$\qquad 2x^3 = 2 \qquad\qquad x = 0$

$\qquad x^3 = 1$

$\qquad x^{\frac{3}{1}} = 1$

$\qquad \left(x^{\frac{3}{1}}\right)^{\frac{1}{3}} = 1^{\frac{1}{3}}$

$\qquad x = 1$

③ $\underline{x = 0}$

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

$\quad = 0^2 + \frac{2}{0}$

$\underline{x = 1}$

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

$y = 1^2 + \frac{2}{1}$

$y = 3$

$\boxed{\text{Abs min: } (1, 3)}$