

1 극한이 존재한다면 극한값을 구하여라.

$$(i) \lim_{(x,y) \rightarrow (2,0)} \left(\frac{x^2 - xy + 1}{x^2 + y^2} \right)$$

$$(ii) \lim_{(x,y) \rightarrow (0,0)} \left(\frac{y}{x} \right)$$

$$(iii) \lim_{(x,y) \rightarrow (2,2)} \left(\frac{x^3 + 2x^2y - xy - 2y^2}{x + 2y} \right)$$

$$(iv) \lim_{(x,y) \rightarrow (0,0)} \left(\frac{xy}{3x^2 + 2y^2} \right)$$

$$(v) \lim_{(x,y,z) \rightarrow (0,0,0)} \left(\frac{x^3 + y^3 + z^3}{x^2 + y^2 + z^2} \right)$$

$$(vi) \lim_{(x,y) \rightarrow (0,0)} \left(\frac{x - y}{x^2 + y^2} \right)$$

$$(vii) \lim_{(x,y,z) \rightarrow (0,0,0)} \left(\frac{\sin(x^2 + y^2 + z^2)}{\sqrt{x^2 + y^2 + z^2}} \right)$$