

Find the Limit.

(1) $\lim_{(x,y) \rightarrow (\pi/4, 2)} y \sin(x, y)$

(2) $\lim_{(x,y) \rightarrow (0,0)} (\sin x + \cos y)$

(3) $\lim_{(x,y) \rightarrow (1,1)} \frac{xy}{x^2 + y^2}$

(4) $\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 y^2}{x^2 + y^2}$

(5) $\lim_{(x,y) \rightarrow (0,0)} \frac{xy^2}{x^2 + y^2}$

$$(6) \lim_{(x,y,z) \rightarrow (1,2,5)} \sqrt{x+y+z}$$

$$(7) \lim_{(x,y) \rightarrow (0,0)} \frac{x^3 + y^3}{x^2 + y^2}$$

$$(8) \lim_{(x,y) \rightarrow (0,0)} \frac{2x - y^2}{2x^2 + y}$$

$$(9) \lim_{(x,y) \rightarrow (0,0)} \left(\frac{-xy^2}{x^2 + y^4} \right)$$

$$(10) \lim_{(x,y) \rightarrow (0,0)} \frac{xy}{x^2 + y^2}$$

Answer Key

(1) 2

(2) 1

(3) $\frac{1}{2}$

(4) 0

(5) 0

(6) $2\sqrt{2}$

(7) 0

(8) 2

(9) $-\frac{1}{2}$

(10) $\frac{1}{2}$