

Ejercicios 1

i) Establecer el dominio y rango de las siguientes funciones

1. $f(x, y) = x^2 + y^2 - 1$

2. $f(x, y) = \frac{1}{x^2 + y^2}$

3. $f(x, y) = \sqrt{x^2 + y^2 - 4}$

4. $f(x, y) = \frac{x^2 + 1}{y}$

5. $f(x, y, z) = \sin(xyz)$

6. $f(x, y, z) = \sqrt{(x-1)(yz-1)}$

ii) Calcular

7. $\lim_{(x,y) \rightarrow (0,0)} \cos(xy)$

8. $\lim_{(x,y) \rightarrow (0,0)} e^{xy}$

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

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

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

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

13. $\lim_{(x,y) \rightarrow (1,1)} \frac{x^2 - y^2}{x - y}$

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

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

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

17. $\lim_{(x,y) \rightarrow (0,0)} \frac{x}{y}$

18. $\lim_{(x,y) \rightarrow (0,0)} \cos\left(\frac{1}{xy}\right)$