

Ejercicios 2

i) Calcular las derivadas parciales de

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

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

5. $f(x, y) = e^{xy} + xy$

7. $f(x, y) = x^4$

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

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

13. $f(x, y) = e^{-(x^2+y^2)}$

15. $f(x, y) = \sin(xy)$

2. $f(x, y) = \cos(x + y)$

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

6. $f(x, y) = x^2 - y^2 + 6xy + 4x - 8y + 2$

8. $f(x, y) = x + 2y$

10. $f(x, y) = \sin(x + y)$

12. $f(x, y) = \frac{xy+1}{x+y}$

14. $f(x, y) = \ln(xy)$

16. $f(x, y) = \tan(x + y)$

ii) Calcular las derivadas parciales segundas de

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

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

21. $f(x, y) = e^{xy} + xy$

23. $f(x, y) = x^4$

25. $f(x, y) = \ln(xy)$

18. $f(x, y) = \cos(x + y)$

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

22. $f(x, y) = x^2 - y^2 + 6xy + 4x - 8y + 2$

24. $f(x, y) = x + 2y$

26. $f(x, y) = \sin(xy)$

iii) Demostrar que la función $f(x, y) = \sin(x+y) + \cos(x-y)$ satisface la ecuación de onda

$$\frac{\partial^2 f}{\partial x^2} - \frac{\partial^2 f}{\partial y^2} = 0 .$$