```python
# Definir la función f(x) = ln(x) y calcular las derivadas hasta el cuarto orden
f = sp.ln(x)
f_prime = sp.diff(f, x)
f_double_prime = sp.diff(f_prime, x)
f_triple_prime = sp.diff(f_double_prime, x)
f_fourth_prime = sp.diff(f_triple_prime, x)

# Evaluar las funciones y derivadas en x = 1
f_1 = f.subs(x, 1)
f_prime_1 = f_prime.subs(x, 1)
f_double_prime_1 = f_double_prime.subs(x, 1)
f_triple_prime_1 = f_triple_prime.subs(x, 1)
f_fourth_prime_1 = f_fourth_prime.subs(x, 1)

# Usar la serie de Taylor hasta el cuarto orden para predecir f(2.5)
x_value = 2.5
taylor_approx_4th_order = (
    f_1 +
    f_prime_1 * (x_value - 1) +
    (f_double_prime_1 / sp.factorial(2)) * (x_value - 1)**2 +
    (f_triple_prime_1 / sp.factorial(3)) * (x_value - 1)**3 +
    (f_fourth_prime_1 / sp.factorial(4)) * (x_value - 1)**4
)

# Calcular el valor verdadero de f(2.5)
f_true_2_5 = sp.ln(x_value)

# Calcular el error relativo porcentual
relative_error_2_5 = abs((f_true_2_5 - taylor_approx_4th_order) / f_true_2_5) * 100

# Imprimir los resultados
(f_1, f_prime_1, f_double_prime_1, f_triple_prime_1, f_fourth_prime_1,
 taylor_approx_4th_order, f_true_2_5, relative_error_2_5.simplify())
# Imprimir los resultados con etiquetas explicativas
print(f"f(1) = {f_1}")
print(f"f'(1) = {f_prime_1}")
print(f"f''(1) = {f_double_prime_1}")
print(f"f'''(1) = {f_triple_prime_1}")
print(f"f''''(1) = {f_fourth_prime_1}")
```

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```python
    f_1 +
    f_prime_1 * (x_value - 1) +
    (f_double_prime_1 / sp.factorial(2)) * (x_value - 1)**2 +
    (f_triple_prime_1 / sp.factorial(3)) * (x_value - 1)**3 +
    (f_fourth_prime_1 / sp.factorial(4)) * (x_value - 1)**4
)

# Calcular el valor verdadero de f(2.5)
f_true_2_5 = sp.ln(x_value)

# Calcular el error relativo porcentual
relative_error_2_5 = abs((f_true_2_5 - taylor_approx_4th_order) / f_true_2_5) * 100

# Imprimir los resultados
(f_1, f_prime_1, f_double_prime_1, f_triple_prime_1, f_fourth_prime_1,
 taylor_approx_4th_order, f_true_2_5, relative_error_2_5.simplify())
# Imprimir los resultados con etiquetas explicativas
print(f"f(1) = {f_1}")
print(f"f'(1) = {f_prime_1}")
print(f"f''(1) = {f_double_prime_1}")
print(f"f'''(1) = {f_triple_prime_1}")
print(f"f''''(1) = {f_fourth_prime_1}")
print(f"Aproximación de f(2.5) con la serie de Taylor (4to orden) = {taylor_approx_4th_order}")
print(f"Valor verdadero de f(2.5) = {f_true_2_5}")
print(f"Error relativo porcentual = {relative_error_2_5}%")
```

```
f(1) = 0
f'(1) = 1
f''(1) = -1
f'''(1) = 2
f''''(1) = -6
Aproximación de f(2.5) con la serie de Taylor (4to orden) = 0.234375000000000
Valor verdadero de f(2.5) = 0.916290731874155
Error relativo porcentual = 74.4213280952197%
```