```
import math

# Initial values
zeta = 0.15
wp = 30
w_1 = 25
w_2 = 35
x_p = 16.16
x_c = 10.77

while True:
    # Calculate w_n')
    w_n = wp * (1 + zeta**2)


    # Calculate r_1 and r_2
    r_1 = w_1 / w_n
    r_2 = w_2 / w_n


    # Calculate x_r and n
    x_r = x_p * (1 - zeta**2 / 2)
    print('x_r',x_r)
    n = x_r / x_c
    print('n',n)
    # Calculate zeta_1 and zeta_2
    zeta_1 = (1 - r_1**2) / (2 * math.sqrt(n**2 - r_1**2))
    zeta_2 = (r_2**2-1) / (2 * math.sqrt(n**2 - r_2**2))
    print('zeta_1',zeta_1)
    print('zeta_2',zeta_2)
    # Calculate zeta_new
    zeta_new = (zeta_1 + zeta_2) / 2
    print('zeta_new',zeta_new)

    # Check if the condition is met
    if abs(zeta - zeta_new) < 0.0001:
        break

    # Update zeta
    zeta = zeta_new

print("Final zeta:", zeta)
```