$5^a = 3, 8^b = 5, 13^c = 8$

$5^3 < 5^b$

$a = \frac{ln3}{ln5}, b = \frac{ln5}{ln8}, c = \frac{ln8}{ln13}$

$a \div b = \frac{ln(3 \times 8)}{ln(5 \times 5)} = \frac{ln24}{ln25} = log_{25}24 < 1$

$b \div c = \frac{ln(5 \times 13)}{ln(8 \times 8)} = \frac{ln65}{ln64} > 1$

$a \div c = \frac{ln(3 \times 13)}{ln(5 \times 8)} = \frac{ln39}{ln40} < 1$