R Code to determing Plot Radius Factor by BAF, and TPA

I'm back to point sampling forestry calculations. When BAF = 10, the equation to calculate the number of trees per acre (e.g., tpa) represented by a specific dbh is tpa = 43560 / (pi \* (dbh \* 2.75)^2). How do I do the calculation for a different BAF? I would like the general formula for how to calculate the value of "2.75" but specifically for BAF = 9.1

A math formula with numbers and symbols

AI-generated content may be incorrect.

prf <- function(BAF) sqrt(43560 \* 0.005454154 / (pi \* BAF)) # ft per inch

tpa\_by\_dbh <- function(dbh\_in, BAF) 43560 / (pi \* (dbh\_in \* prf(BAF))^2)

# Example: BAF = 9.1

prf\_9\_1 <- prf(9.1) # ≈ 2.883

tpa\_12in\_9\_1 <- tpa\_by\_dbh(12, 9.1) # TPA represented by a 12" tree

prf\_9\_1; tpa\_12in\_9\_1