1. Write a `pois.prob()` function that computes $P(X = x)$, $P(X \neq x)$, $P(X < x)$, $P(X \leq x)$, $P(X > x)$, and $P(X \geq x)$. Enable the user to specify the rate parameter λ.

```
pois.prob <- function(x, lambda, type="<="){
  # Use dpois and ppois to conditionally return the correct probability

  p.eq <- dpois(x, lambda)     # P(X = x)
  p.neq <- 1 - p.eq            # P(X != x)
  p.lt <- ppois(x - 1, lambda) # P(X < x)
  p.lte <- ppois(x, lambda)    # P(X <= x)
  p.gt  <- 1 - p.lte           # P(X > x)
  p.gte  <- 1 - p.lt           # P(X >= x)

  if (type == "=") {
    return(p.eq)
  }
  else if (type == "!=") {
    return(p.neq)
  }
  else if (type == "<") {
    return(p.lt)
  }
  else if (type == "<=") {
    return(p.lte)
  }
  else if (type == ">") {
    return(p.gt)
  }
  else if (type == ">=") {
    return(p.gte)
  }
}

pois.prob(x = 1, lambda = 2,"==")
```

2. Write a `beta.prob()` function that computes $P(X = x)$, $P(X \neq x)$, $P(X < x)$, $P(X \leq x)$, $P(X > x)$, and $P(X \geq x)$ for a beta distribution. Enable the user to specify the shape parameters α and β.

```
beta.prob <- function(x, alpha, beta, type="<="){
  # Use dbeta and pbeta to conditionally return the correct probability

  if (type == "="){
    return(0)
  }
  else if (type == "!="){
    return(1)
  }
  else if(type == "<" | type == "<="){
    return(pbeta(x, alpha, beta))
  }
  else if (type == ">" | type == ">="){
    return(1 - pbeta(x, alpha, beta))
  }
}

beta.prob(x = 0.5, alpha = 5, beta = 5, ">=")
```