Ejercicios Usando Latex

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PRODUCTO NOTABLE

La formula del producto notable es:

$$(a+b)^2 = a^2 + 2ab + b^2$$

```
bin2 <- function(a,b) {
  a^2+2*a*b+b^2
}
bin2(2,3)
```

```
## [1] 25
```

BINOMIO DE NEWTON

$$(a+b)^n = \sum_{k=0}^{n} \binom{n}{k} \cdot a^{n-k} \cdot b^k$$

```
binomioNewton <- function(a,b,n) {
  sum(choose(n,(0:n))*a^(n-(0:n))*b^(0:n))
}
binomioNewton(1,3,3)
```

```
## [1] 64
```

MATRIZ INVERSA

La Matriz inversa de A es:

$$A^{-1} = \frac{adj(A^T)}{|A|}$$

Calcular la matriz inversa de A:

$$A = \begin{pmatrix} 5 & 0 & 1 \\ 3 & 0 & 0 \\ 5 & 1 & 1 \end{pmatrix}$$

En R se crean las siguientes funciones:

```
library(matlib)
```

```
Warning: package 'matlib' was built under R version 3.6.3
```

```
A <- cbind(c(5,0,1),c(3,0,0),c(5,1,1))

adjunta <- function(X) {
  C <- matrix(rep(0,length(X)),nrow(X),ncol(X))
  for (i in seq(1,nrow(X))) {
    for (j in seq(1,nrow(X))) {
      C[i,j] <- cofactor(X,i,j)
    }
  }
  return(t(C))
}

inversa <- function(Y) {
  Z <- (1/det(Y))*adjunta(Y)
  return(Z)
}

invA <- inversa(A)
invA
```

```
          [,1] [,2]      [,3]
[1,] 0.0000000   -1  1.000000
[2,] 0.3333333    0 -1.666667
[3,] 0.0000000    1  0.000000
```