

Hello,

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## ## Mathematical Induction

### \*\*Principle:\*\*

To prove the following by using principle of mathematical induction

$1+2+3+\dots+n = \frac{n(n+1)}{2}$  for all  $n \in \mathbb{N}$

### \*\*Solution:\*\*

Let  $(P(n))$  be  $(1+2+3+\dots+n = \frac{n(n+1)}{2})$

### \*\*Step I:\*\*

Show that  $(P(1))$  is true.

$$1 = \frac{1(1+1)}{2}$$

$$1 = 1$$

$(P(1))$  is true

### \*\*Step II:\*\*

Assume  $(P(k))$  is true for some positive integer  $(k)$ .

$$1 + 2 + 3 + \dots + k = \frac{k(k+1)}{2}$$

### \*\*Step III:\*\*

We shall now prove that  $(P(k+1))$  is true.

$$1 + 2 + 3 + \dots + k + (k + 1) = \frac{(k + 1)(k + 2)}{2}$$

$$[1 + 2 + 3 + \dots + k] + (k + 1) = \frac{(k + 1)(k + 2)}{2}$$

$$\frac{k(k + 1)}{2} + (k + 1) = \frac{(k + 1)(k + 2)}{2}$$

$$\frac{k(k + 1) + 2(k + 1)}{2} = \frac{(k + 1)(k + 2)}{2}$$

$$\frac{(k + 1)(k + 2)}{2} = \frac{(k + 1)(k + 2)}{2}$$

$$(k + 1)(k + 2) = (k + 1)(k + 2)$$

$$k^2 + 3k + 2 = k^2 + 3k + 2$$

$$k^2 + 3k + 2 - k^2 - 3k - 2 = 0$$

$$0 = 0$$

Hence  $\backslash(P(n)\backslash)$  is true for  $\backslash(n=k+1\backslash)$

**\*\*Therefore  $\backslash(P(n)\backslash)$  is true for all  $\backslash(n \in N\backslash)$ .\*\***

FOR MICHAEL P:

1. GO OVER ORIGIN OF RELATIONSHIP/AI AND INITIAL AGREEMENT
2. ANY KNOWLEDGE RELATIONSHIP GOING BADLY? WHEN/HOW FIND OUT
3. INVOLVED IN ATTEMPTS TO MEDIATE/AGREE BEFORE COURT FILING?  
SHOULD SHEILA BE INVOLVED? IF NOT, WHY NOT?
4. EST. PATERNITY? WHY?
5. LAST COMM - CARD FOLLW BY ANGRY TELEPHONE MESS?
6. DO COUPLES/ETC. NEED TO THINK MORE CAREFULLY ACT POSS. OF BREAKUP?
7. TINA SUGGEST. THERE'S BEEN RADICAL SHIFT IN YOUR POS - FRONT OF OH. WILL TO  
RAISE CHILD - THEN SUDDEN ANGER, TESTIMONY TO EXCLUDE TINA, SHE SAYS SHE  
CAN'T UNDERSTAND SHIFT CAN SHED LIGHT ON THAT?

#### Director of Finance

- Eat muffin and get news in cafeteria
- Check calendar, cancel some meetings
- Check "cash balances", open the bank
- Lots of math, fixing formulas
- Keep loans manageable, under a limit
- Often disappointed
- Review expenses and sign checks
- Implementation of paperless process
- Holding interviews for positions

# The Tempest

20/10/15

## Act 1 - Scene 2

### Summary

- Prospero & Miranda witness shipwreck
- Miranda feels empathy
- Prospero finally discloses their past to Miranda
  - Prospero was once Duke of Milan but became more interested in his studies than politics
  - Prospero shared his dukeship with Antonio (brother) but he overthrew Prospero
  - Antonio had Prospero & Miranda thrown off island -> they found new island
- Prospero puts Miranda to sleep
- Prospero fails to Ariel (subservient spirit) -> they were responsible for the storm
  - everyone is safe & in groups on island...
  - ...except Ariel is alone
  - ...king's son is in boat (safe)
  - ...had saved Ariel from Sycorax's imprisonment
- Prospero & Miranda talk to Caliban (servant) against will
- Miranda & Ferdinand fall in love at first sight
- Prospero "imprisons" Ferdinand
- Prospero promises Ariel freedom in 2 days

### Notes

- Prospero is god-like -> he can control the weather
- Miranda is a highly complex character -> innocent but not simple
- seen through use of metaphors & lyrical language
- "Art thou ignorant of what thou art, nought knowing of whence I am." -> 2.1.19
- Prospero uses cryptic language to puzzle Miranda to think for herself -> self discovery
- catalyst for discovery

## Bolo de fubá

### Ingredientes:

3 ovos

2 xícaras (xícara de chá) de açúcar

1 copo de farinha de trigo

1 copo de leite

1 copo de óleo

2 colheres de sobremesa de fermento

1 pitada de sal

### Preparo:

Bater tudo no liquidificador e colocar em uma forma untada e enfarinhada.

Depois de pronto polvilhar com canela e açúcar e colocar no forno para dourar e retirar estando frio.



## Bolo de aveia

- 1 tablete margarina
- 1 xícara de açúcar refinado
- 3 ovos inteiros
- 3 maçãs cortadas em cubos e casca
- 2 bananas picadas em cubos
- 1 xícara de aveia
- 1 e 1/2 xícaras de farinha de trigo
- 1 colher de sopa de canela em pó
- 1 colher de sopa de pó royal

Junte a margarina, açúcar e ovo.

Bata a farinha de trigo, misture bem.

Acrescente canela e o pó royal.

Continue misturando, por último coloque as maçãs e de véspera misture (banana, morango, abacaxi, etc.) unte a forma.

Polvilhe 1 xícara e 1/2 de açúcar com 2 colheres de sopa de canela e polvilhe sobre a massa.

Deixe ficar no forno até dourar.

Bolo de fubá com queijo

1 xícara de fubá

1 xícara de farinha de trigo

1 xícara de açúcar

1 colher (sopa) de manteiga

3 ovos

2 xícaras de leite

1 colher (sopa) de queijo ralado

1 colher (sopa) de fermento em pó

Modo de preparo:

Misture todos os ingredientes secos.

Acrescente os ovos, a manteiga e o leite aos poucos, mexendo bem.

Por último, acrescente o queijo ralado e o fermento.

Despeje a massa numa forma untada e enfarinhada.

Leve ao forno médio, pré-aquecido, por cerca de 40 minutos.

Sirva quente ou frio.

KNN:

HOW IT WORKS:

IT DETECTS THE K NEAREST POINTS IN THE N DIMENSIONAL SCATTER PLOT, LOOKS FOR THEIR CLASSIFICATIONS AND DETERMINES THEIR CLASS. BASED ON THIS INFORMATION

- WHAT IF IT TIES: USUALLY THE ALGORITHM WILL TAKE INTO CONSIDERATION THE CLOSEST NODE'S CLASS

- HOW TO ADJUST SIMPLY CHANGING THE K COEFFICIENT OF NEIGHBORS TO BE STUDIED. (and adjust the minorities weight)

NOTE: BETTER FOR FINER, INCREASED DATASETS.

- SMOTE: BETTER FOR FIXING. (INCREASE SAMPLES)

- UNDERSAMPLING: DISCARD MAJORITIES. (DECREASES DATA UNTIL IT EQUALS THE # OF MINORITIES)