Parcial 1.1

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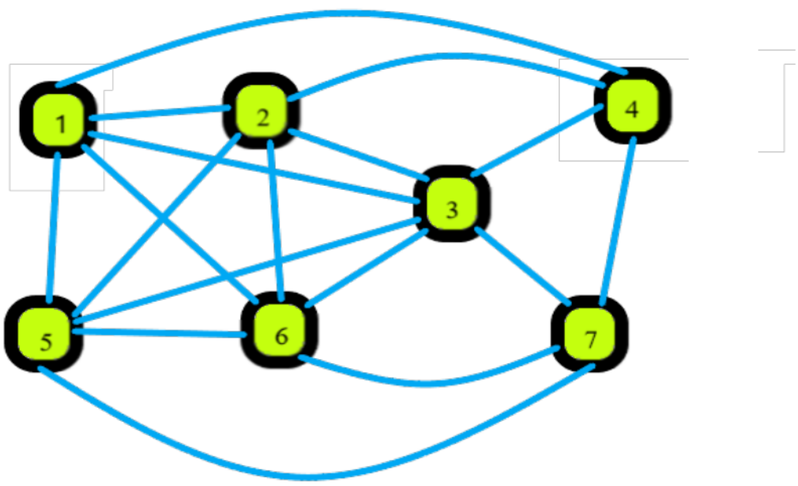
Respuesta No. 1

- **Nodos:** $\{1, 2, 3, 4, 5, 6, 7\}$
- **Vertices:**

$$\left\langle \left\{ \begin{bmatrix} \langle 1,2\rangle & \langle 1,3\rangle & \langle 1,4\rangle \\ \rangle & \langle 1,5\rangle & \langle 1,6\rangle \\ \langle 2,3\rangle & \langle 2,4\rangle & \langle 2,5\rangle \\ \langle 2,6\rangle & \langle 3,4\rangle & \langle 3,5\rangle \\ \langle 3,6\rangle & \langle 3,7\rangle & \langle 4,7\rangle \\ \langle 5,6\rangle & \langle 5,7\rangle & \langle 6,7 \end{bmatrix} \right\} \right\rangle$$

- **Grafo:**



Respuesta No. 2

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$$

- **Caso Base:** $N = 1$

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

- **Caso inductivo:** $\forall n$
- **Hipotesis inductiva:** supongamos entonces que p(n) es verdadera, es decir que 1+2+3+...+n=n(n+1)/2 es verdadera

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$$

- **Demostracion: n = n+1**

$$\sum_{i=1}^{n} i = \frac{n+1(n+1+1)}{2} = \frac{n+1(n+2)}{2} = \frac{n+1[(n+1)+1]}{2}$$

Respuesta No. 3

$$\sum_{i=1}^{n} 1 \;= 1 + 2 + 3 + 4 + \; \ldots \; + n$$

$$\sum(n) \begin{cases} 0 & \text{si } n = 0 \\ (n - i + 1) & \text{si } n = s(a) \ y \ i = s(b) \end{cases}$$

Respuesta No. 4

$$a \oplus b = b \oplus a$$

- **Caso base:** $a = 0$

$$0 \oplus b = b \oplus 0$$
$$b = b$$

- b = 0

$$a \oplus 0 = 0 \oplus a$$
$$a = a$$

- **Caso inductivo:**

  $a \oplus b = b \oplus a$

- **Demostracion**

$$\begin{gathered} s(a) \oplus b = b \oplus s(a) \\ s(a \oplus b) = b \oplus s(a) \\ s(a \oplus b) = s(b \oplus a) \end{gathered}$$

Repuesta No. 5

Dada la función $a \geq b$ para numeros naturales unarios:

$$a \geq b = \begin{cases} s(o) & \text{si } b = o \\ o & \text{si } a = o \\ i \geq j & \text{si } a = s(i) \ \& \ b = s(j) \end{cases}$$

- **Caso base:** n = 0

$$(0 + 0) \geq s(0)$$

- **Caso inductivo:**

$$\begin{gathered} s(i) \oplus s(i) \geq s(i) \\ s(s(i) \geq s(i) \\ s(s(i) \ominus s(i) \geq 0 \\ s(i) \geq 0 \\ s(i) \geq 0 = s(0) \end{gathered}$$