

Maple worksheet hint for Homework 6

```
> with(linalg):
```

Warning, the protected names norm and trace have been redefined and unprotected

```
> H:=matrix(3,7, [1,0,1,1,1,0,0,
                  1,1,1,0,0,1,0,
                  0,1,1,1,0,0,1 ]);
```

$$H := \begin{bmatrix} 1 & 0 & 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

(1)

```
> W:=matrix(8,3, [0,0,0,
                  0,0,1,
                  0,1,0,
                  0,1,1,
                  1,0,0,
                  1,0,1,
                  1,1,0,
                  1,1,1 ]);
```

$$W := \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$$

(2)

```
> CodeVecs:=map('mod', evalm(W&.H), 2);
```

$$\text{CodeVecs} := \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{bmatrix}$$

(3)

$$\begin{aligned} > A := \left(\frac{1}{8}\right) \cdot \left((1+x)^7 + 7 \cdot (1+x)^3 \cdot (1-x)^4 \right); \\ & \qquad \qquad \qquad A := \frac{1}{8} (1+x)^7 + \frac{7}{8} (1+x)^3 (1-x)^4 \end{aligned} \tag{4}$$

$$\begin{aligned} > \text{expand}(A); \\ & \qquad \qquad \qquad 1 + 7x^3 + 7x^4 + x^7 \end{aligned} \tag{5}$$

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