(5)

$$\left[\begin{array}{ccc|c} 3 & 6 & 1 & 1 \\ 5 & 5 & 3 & 1+\lambda \\ 6+\lambda & 4 & 6-\lambda^2 & 3 \end{array}\right]$$

$$\det(A) = 15(6-\lambda^2) + 18(6+\lambda^2) + 20$$
$$- 5(6+\lambda^2) - 36 - 30(6-\lambda^2)$$
$$= -15(6-\lambda^2) + 13(6+\lambda^2) - 16 =$$
$$= 28\lambda^2 - 106 + 78 = 28\lambda^2 - 28$$
$$= 28(\lambda^2 - 1) = 0 \quad (\text{s} \mathbb{Z}_2)$$

$$\left|\begin{bmatrix} 1 & 5 & 1 \\ 1+\lambda & 5 & 3 \\ 3 & 4 & 6-\lambda^2 \end{bmatrix}\right| = 5(6-\lambda^2) + 54 + (1+\lambda)$$
$$- 15 - 12 - 6(6-\lambda^2)(1+\lambda) =$$
$$6\lambda^3 + \lambda^2 - 32\lambda + 25$$
$$(\lambda - 1)(6\lambda^2 + 7\lambda - 25) =$$
$$= (\lambda - 1)(6\lambda^2 - 25)$$
$$(\lambda - 1)(-\lambda^2 + 3)$$