

**MATH 54 FALL 2017: DISCUSSION 205/208 QUIZ#10**

GS: CHRISTOPHER EUR, DATE: 11/3/2017

STUDENT NAME: \_\_\_\_\_

*Problem 1.* Let  $A = \begin{bmatrix} 3 & 6 & 3 \\ 4 & 8 & 4 \\ 0 & 0 & 1 \end{bmatrix}$ .

(a) (3 points) Find an orthonormal basis for column space of  $A$ .

(b) (3 points) Find the least-squares solution to  $A\vec{x} = \vec{b}$  where  $\vec{b} = \begin{bmatrix} 7 \\ 1 \\ 1 \end{bmatrix}$ .

*Problem 2.* (4 points) True/False: Consider a pairing on  $\mathbb{P}_2$  defined as follows:

$$\langle p(t), q(t) \rangle := \int_0^1 p(t) + q(t) dt$$

This is an inner-product on  $\mathbb{P}_2$ .