

Name:

1. Consider the inner product on  $P_2$  given by

$$\langle p, q \rangle = p(-1)q(-1) + p(0)q(0) + p(1)q(1).$$

Let  $f_1(x) = 1$  and  $f_2(x) = x^2$ . Using this inner product, compute  $\text{proj}_{f_2} f_1$ .

2. Find the line which best fits the data  $(0, 1)$ ,  $(1, 0)$ , and  $(2, 1)$  in the least-squares sense.