Final Exam

Problem 1:

- $AD \perp BC$, implying
$$y_3(y_2 - y_1) + x_3(x_2 - x_1) = 0$$

- $|AB| = |AC|$, implying
$$x_2^2 + y_2^2 = x_1^2 + y_1^2$$

- $BD//CD$, implying
$$(y_3 - y_1)(x_2 - x_1) = (y_2 - y_1)(x_3 - x_1)$$

- to prove $|BD| = |CD|$, equivalent to
$$(y_3 - y_1)^2 + (x_3 - x_1)^2 = (y_3 - y_2)^2 + (x_3 - x_2)^2$$

Three constraint parameters.

Problem 2

$$F_3 = \text{FRem}(F_2, F_1, x_2) = 1 + x_1^2 + x_2^2 - x_1 x_2 - x_2^2$$
$$= 1 + x_1^2 - x_1 x_2$$

$$F_4 = \text{FRem}(F_1, F_3, x_2) = (x_1 + x_2)x_1 + 1 + x_1^2 - x_1 x_2$$
$$= 1 + 2x_1^2$$