Worksheet for 2020-09-04

Problem 1. Let

$$A = (1, 0, 2)$$
$$B = (0, 3, 4)$$
$$C = (2, -2, 0)$$
$$D = (3, 1, 1)$$

(I picked these points randomly so there's no guarantee the arithmetic will be pretty.) Compute:

  (a) An equation for the line through the points A, D.
  (b) An equation for the line through the point C which is parallel to the line from (a).
  (c) An equation for the plane containing the points A, B, C.
  (d) An equation for the line through the point A which is perpendicular to the plane from (c).
  (e) The area of the triangle with vertices A, B, C.
  (f) The distance from C to the line from (a).
  (g) The distance from D to the plane from (c).
  (h) The angle (between 0 and $\pi/2$) formed between the line from (a) and the line through A and C. (Express your answer in terms of inverse trig functions, or use a calculator to get an approximate numerical answer.)
  (i) The angle (between 0 and $\pi/2$) formed between the line from (a) and the plane from (c). (Ditto.)