

Strassen's Algorithm

To Compute

$$r = ae + bf \quad (1)$$

$$s = ag + bh \quad (2)$$

$$t = ce + df \quad (3)$$

$$u = cg + dh \quad (4)$$

Calculations

$$P_1 = a(g - h) = ag - ah$$

$$P_2 = (a + b)h = ah + bh$$

$$s = P_1 + P_2$$

$$P_3 = (c + d)e = ce + de$$

$$P_4 = d(f - e) = df - de$$

$$t = P_3 + P_4$$

$$P_5 = (a + d)(e + h) = ae + ah + de + dh$$

$$P_6 = (b - d)(h + f) = -dh - df + bh + bf$$

$$r = P_5 + P_4 - P_2 + P_6$$

$$P_7 = (a - c)(e + g) = ae + ag - ce - cg$$

$$u = P_5 + P_1 - P_3 - P_7$$