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## DETERMINANTAL REPRESENTATION OF TRIGONOMETRIC POLYNOMIAL CURVES VIA SYLVESTER METHOD

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**ABSTRACT.** For any trigonometric polynomial  $\phi(\theta)$ , we give a constructive algorithm by Sylvester elimination which produces matrices  $C_1, C_2, C_3$  such that  $\det(C_1 + \Re(\phi(\theta))C_2 + \Im(\phi(\theta))C_3) = 0$ . For a typical trigonometric polynomial, we assert that  $C_1$  is positive definite, and thus the typical polynomial curve admits a determinantal representation.

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