

## Exercise

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(1) Show that  $u(x, y)$  is harmonic in some domain and find a harmonic conjugate when

(a)  $u(x, y) = 2x(1 - y)$

(b)  $u(x, y) = 2x - x^3 + 3xy^2$

(c)  $u(x, y) = \sinh x \sin y$

(d)  $u(x, y) = \frac{x}{x^2 + y^2}$