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We consider American put options with a constant dividend yield. These are derivative securities which give the holder the right but not the obligation to sell some underlying security at a predetermined price at or before an expiration date. Since these options can be exercised at any time, the holder must constantly decide whether to retain the option or exercise it immediately, motivated by the desire to maximize his expected pay-off, and this gives rise to a free boundary problem for the optimal exercise boundary. Starting from the Black-Scholes partial differential equation for the value of a financial derivative, we apply a modified Laplace transform to derive an (Urysohn) integral equation giving the location of this free boundary. (Received October 02, 2000)