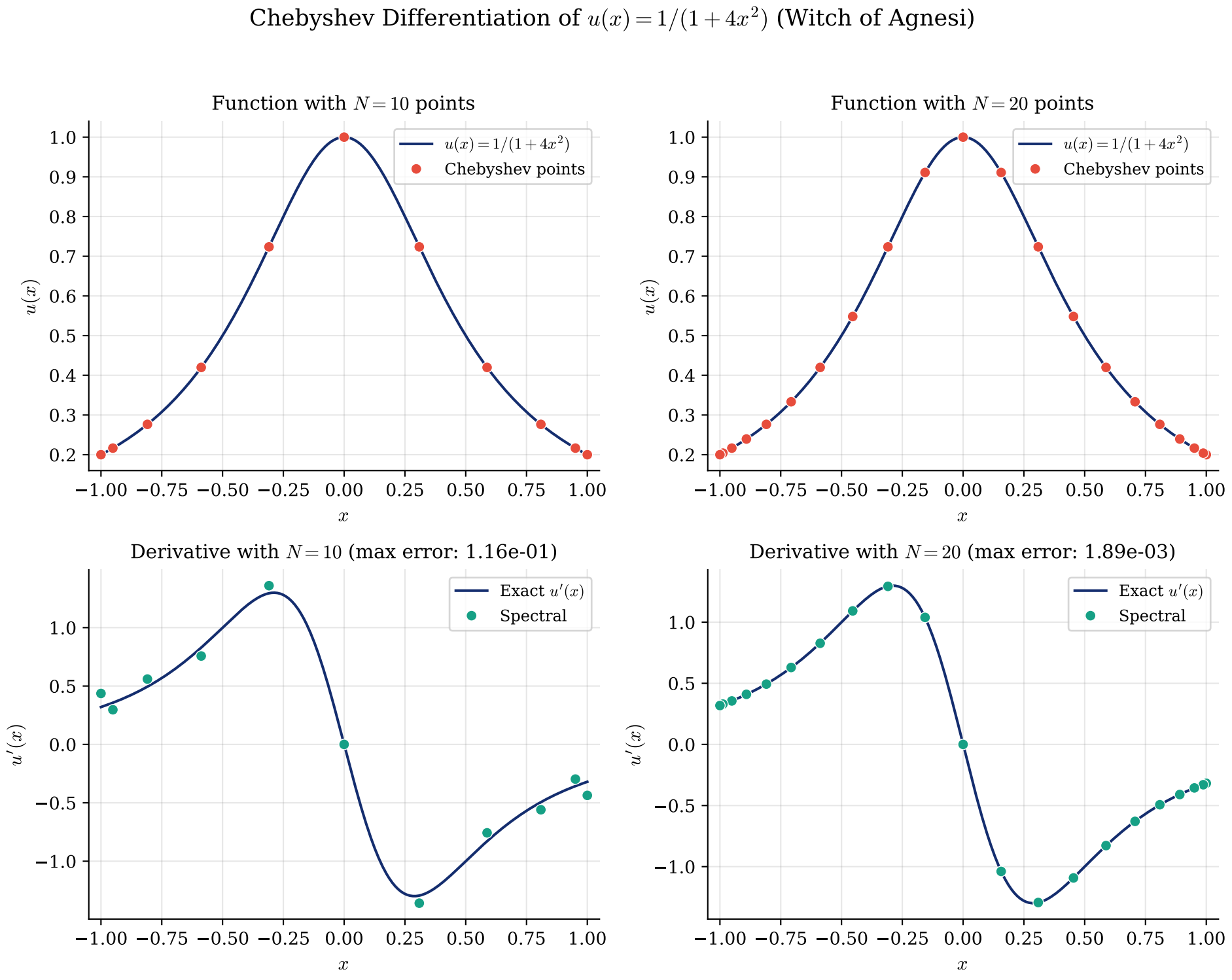
Chebyshev Differentiation of $u(x) = 1/(1+4x^2)$ (Witch of Agnesi)
Function with $N = 10$ points
$u(x) = 1/(1+4x^2)$
Chebyshev points
$u(x)$
x
Function with $N = 20$ points
$u(x) = 1/(1+4x^2)$
Chebyshev points
$u(x)$
x
Derivative with $N = 10$ (max error: 1.16e-01)
Exact $u'(x)$
Spectral
$u'(x)$
x
Derivative with $N = 20$ (max error: 1.89e-03)
Exact $u'(x)$
Spectral
$u'(x)$
x