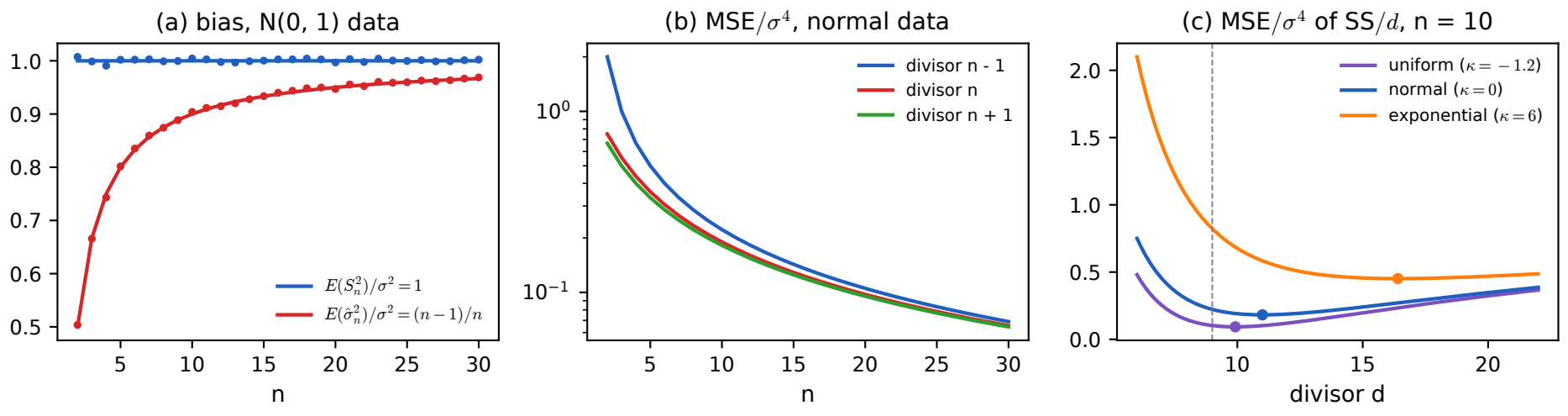

(a) bias, N(0, 1) data
1.0
0.9
0.8
0.7
0.6
0.5
5
10
15
20
25
30
n
$E(S_n^2)/\sigma^2 = 1$
$E(\hat{\sigma}_n^2)/\sigma^2 = (n-1)/n$
(b) MSE/σ^4, normal data
10^0
10^{-1}
5
10
15
20
25
30
n
divisor n - 1
divisor n
divisor n + 1
(c) MSE/σ^4 of SS/d, n = 10
2.0
1.5
1.0
0.5
0.0
10
15
20
divisor d
uniform ($\kappa = -1.2$)
normal ($\kappa = 0$)
exponential ($\kappa = 6$)