11.95

20S. THE SECOND-DERIVATIVE TEST FOR LOCAL EXTREMA ANSWERS

A-20S.1 (a) $(1,2)$ and $(1,-2)$. (b) $H(x,y) = -2y$. Thus $H(1,2) = -4 < 0$, so $(1,2)$ is a saddle point. $H(1,-2) = 4 > 0$, and $f_{xx}(1,-2) = 1 > 0$, so $(1,-2)$ is a local maximum. (c) See the illustration on page 311 in [LN], under A-20.4.

A-20S.2 Critical points $(0,0)$ (saddle point) and $(6,6)$ (local maximum).

A-20S.3 Local minimum at $(4,\frac{1}{2})$.

A-20S.4 Only $(0,1)$ and $(0,-1)$ are critical points. At $(0,1)$ there is a local minimum, and at $(0,-1)$ a saddle point.

A-20S.5 The critical points are $(3,2)$ (local minimum) and $(-3,2)$ (saddle point).