We developed the Japanese version of the Adult ADHD Self-Report Scale (ASRS-J) and report its psychometric properties. The ASRS-J and other questionnaires were administered to 48 adults with ADHD, 46 adults with non-ADHD psychiatric disorders, 96 non-clinical adults, and 894 university students. ADHD diagnoses were made using the Japanese semi-structured diagnostic interview for adult ADHD, which is compatible with the DSM-5. The ASRS-J, its subscales, and the short form, all had Cronbach's $\alpha$ values of around 0.80. Total scores on the ASRS-J and the ASRS-J-6 were highly correlated with readministration after a two-week interval. The total and 18 individual item scores in the ASRS-J were significantly higher in the ADHD group than the other three groups. ASRS-J scores were correlated with scores on the Japanese version of Conners' Adult ADHD Rating Scales-Self Report subscales ($0.59 \leq r \leq 0.77$), with one exception. ASRS-J scores were also correlated (albeit more weakly; $r=0.38$) with Beck Depression Inventory-II total scores. Employing optimal cut-offs, sensitivity, specificity, and positive and negative predictive values of the ASRS-J and ASRS-J-6 are all above 0.69. The ASRS-J and ASRS-J-6 showed acceptable psychometric properties, although further study is necessary.