$$\begin{aligned}
\iint_R 3\,\frac{1+x^2}{1+y^2}\,dA &= \int_0^2 \int_0^1 3\frac{1+x^2}{1+y^2}\,dy\,dx \\
&= 3\int_0^2 (1+x^2)\,dx \int_0^1 \frac{1}{1+y^2}\,dy \\
&= 3\left[x+\tfrac{1}{3}x^3\right]_0^2 [\arctan(y)]_0^1 \\
&= 3\left(2+\tfrac{8}{3}-0\right)\left(\tfrac{\pi}{4}-0\right) = (7/2)\pi
\end{aligned}$$