(11) $x^2+y^2+z^2=a^2 \qquad x^2+y^2=ax$

$z=a^2-x^2-y^2$

$\frac{\partial z}{\partial x}=\frac{-2x}{2\sqrt{a^2-x^2-y^2}}=\frac{-x}{z} \qquad \frac{\partial z}{\partial y}=\frac{-y}{z}$

$SA=\iint_D \sqrt{1+\frac{y^2}{z^2}+\frac{x^2}{z^2}}\,dA$

$=\iint_D \sqrt{\frac{x^2+y^2+z^2}{z^2}}\,dA$

$=\iint_D \frac{a}{\sqrt{a^2-x^2-y^2}}\,dA$

$=\iint_D \frac{ar}{\sqrt{a^2-r^2}}\,dr\,d\theta$

$r^2=ar\cos\theta$

$r=a\cos\theta \qquad r\in[0,a\cos\theta]$

$\theta\in[-\frac{\pi}{2},\frac{\pi}{2}]$ ← range for $a\cos\theta$

$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\int_0^{a\cos\theta}\frac{ar}{\sqrt{a-r^2}}\,dr\,d\theta$

$=\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\left[-a\sqrt{a^2-r^2}\right]_0^{a\cos\theta}d\theta=\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}-a^2\sin\theta+a^2\,d\theta$

$=2\left[a^2\theta+a^2\cos\theta\right]_0^{\frac{\pi}{2}}=2\left(\frac{\pi}{2}a^2-a^2\right)=\pi a^2-2a^2=\boxed{a^2(\pi-2)}$

(13) $z=\frac{1}{1+x^2+y^2}$ $\qquad \frac{\partial z}{\partial x}=\frac{-2x}{(1+x^2+y^2)^2} \qquad \frac{\partial z}{\partial y}=\frac{-2y}{(1+x^2+y^2)^2} \qquad \frac{-2r\cos\theta}{(1+r^2)^2} \qquad \frac{-2r\sin\theta}{(1+r^2)^2}$

$x^2+y^2\le 1$ $\qquad (1,0) \qquad 1=\cos\theta \quad 1=\sin\theta \qquad 1+\frac{4r^2}{(1+r^2)^2}$

$\theta=0, \quad \theta=(\frac{\pi}{2},-\frac{\pi}{2}),$

$r=1 \quad r\in[0,1]$

$\theta\in[0,\frac{3\pi}{2}]$ $\qquad SA=\int_0^{\frac{3\pi}{2}}\int_0^1 r\sqrt{1+\frac{4r^2}{(1+r^2)^2}}\,dr\,d\theta=3.62579\approx 3.6258$

$\boxed{3.6258}$