13. $\int \frac{5}{\sqrt{-x^2+6x}}\,dx$

$(-6\cdot\frac{1}{2})^2$

$(-3)^2$

9

$= \int \frac{5}{\sqrt{-(x^2-6x)}}\,dx$

$= \int \frac{5}{\sqrt{-(x^2-6x+9-9)}}\,dx$

$= \int \frac{5}{\sqrt{-[(x-3)^2-9]}}\,dx$

$= 5\int \frac{1}{\sqrt{-(x-3)^2+9}}\,dx$

$= 5\int \frac{1}{\sqrt{9-(x-3)^2}}\,dx$

$= 5\int \frac{1}{\sqrt{(3)^2-(x-3)^2}}\,dx$

$a=3 \quad u=x-3 \quad du=dx$

$= 5\int \frac{1}{\sqrt{a^2-u^2}}\,du$

$= 5\arcsin\frac{u}{a}+C$

$= 5\arcsin\frac{x-3}{3}+C$