17. $\int_{x=-2}^{x=0} \frac{3}{x^2+2x+8}\,dx$

$= 3\int_{x=-2}^{x=0} \frac{1}{x^2+2x+1-1+8}\,dx$

$= 3\int_{x=-2}^{x=0} \frac{1}{(x+1)^2+7}\,dx$

$= 3\int_{x=-2}^{x=0} \frac{1}{(\sqrt{7})^2+(x+1)^2}\,dx$

$a=\sqrt{7} \quad u=x+1 \quad du=dx$

$= 3\int_{x=-2}^{x=0} \frac{1}{a^2+u^2}\,du$

$= 3\left[\frac{1}{a}\arctan\frac{u}{a}\right]_{x=-2}^{x=0}$

$= 3\left[\frac{1}{\sqrt{7}}\arctan\frac{x+1}{\sqrt{7}}\right]_{x=-2}^{x=0}$

$= \frac{3}{\sqrt{7}}\left[\arctan\frac{0+1}{\sqrt{7}} - \arctan\frac{-2+1}{\sqrt{7}}\right]$

$= \frac{3}{\sqrt{7}}\left[\arctan\frac{1}{\sqrt{7}} - \arctan\frac{-1}{\sqrt{7}}\right]$

$= \frac{3\sqrt{7}}{7}\left[\arctan\frac{\sqrt{7}}{7} - \arctan\frac{-\sqrt{7}}{7}\right]$

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

$(1)^2$

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