Sarah Cutonic Quiz 9 11/29/2021

1. Legendre "Elevets de geometrie"

2. Victor Poncelet "Traite des proporiches projective des figures" cross ratio and perspective drawing

3. Mayor of a small town near Paris

4. Galois

5. a) $\sqrt{2\pi}$

b) $\int_{-\infty}^{\infty} e^{-x^2/2}\,dx = c$

$c^2 = \int_{-\infty}^{\infty} e^{-x^2/2}\,dx \int_{-\infty}^{\infty} e^{-\frac{y^2}{2}}\,dy = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} e^{\frac{-(x^2+y^2)}{2}}\,dx\,dy$

$x^2+y^2 = r^2 \qquad dx\,dy = r\,dr\,d\theta$

$\int_0^{2\pi}\int_0^{\infty} re^{\frac{-r^2}{2}}\,dr\,d\theta =$

let $u = \frac{r^2}{2} \quad du = r\,dr$

$\int_0^{2\pi}\int_0^{\infty} e^{-u}\,du\,d\theta = \int_0^{2\pi}\int_0^{\infty} -e^{-u}\,d\theta = \int_0^{2\pi} d\theta = 2\pi$

Since $c^2 = 2\pi$ then $c = \sqrt{2\pi}$