```
e \times p \left[ -\frac{1}{2} \left( \sum_{i=1}^{\infty} \phi \left( x_i - \theta \right)^2 + T \left( \theta - Q_0 \right)^2 \right) \right]
 = \exp \left[ -\frac{1}{2} \left( \sum_{i=1}^{n} \phi(x_{i}^{2} - 20x_{i} + \theta^{2}) + T\theta^{2} + T\theta^{2} - 200 T \right) \right]
 = exp[-1/2 ( $ \int 2xi^2 - 2 \text{XI} \tilde{\theta} \theta + \text{VO} \theta^2 + \text{VO}^2 + \text{VO}^2 + \text{VO}^2 - 200\tag{VO}
 = exp[-= ((cnp+t)02+ (p &xi+2001)0+p &xi2+1002)]
  = exp [-\frac{1}{2}((n\phi+\tau)\theta^2 - (2\phi\text{2}\chi_1 + 2\theta\tau)\theta)] \times \exp [-\frac{1}{2}(\phi\text{2}\chi_1^2 + \beta^2\tau)]
" as & xī. Oo. T. oure all given.
 : \exp\left[-\frac{1}{2}\left(\phi ZX_1^2 + \tau Q_0^2\right)\right] is a constant
 : left & exp[-\frac{1}{2}((n\phi+\tau)\theta^2-(2\phi\frac{2}{2}\lambda_7+200\tau)\right)
                  = exp [-\frac{1}{2} (n\phi+\tau) (0^2 - \frac{2 (\phi \in \chi_1 + \chi_0 \chi)}{n\phi+\tau} \text{0})]
                   d exp[-½(n+t)(0²-2(€£X;+t00))+(€£x;+00t)²)]
                                                                                      (multiply a constant)
                  = exp[-= (np+t) (0- p=x1+T00)2] Q. = Dright
     : beft a right Q. E. D
```