$$e^{a(x)}\, b(x) \,/ \sqrt{c(x)}$$

DERIVADA

$$\frac{[e^{a(x)} b(x)]' \sqrt{c(x)} - e^{a(x)} b(x) [\sqrt{c(x)}]'}{c(x)}$$

DEVIDO AO FATO QUE QUEREMOS VER QUANDO A DERIVADA É ZERO CONSIDERAREMOS SOMENTE O NUMERADOR

PRIMEIRO ADENDO:

$$[e^{a(x)} b(x)]' \sqrt{c(x)} =$$

$$= [a'(x)\, e^{a(x)} b(x) + e^{a(x)} b'(x)] \sqrt{c(x)}$$

SEGUNDO ADENDO:

$$e^{a(x)} b(x) [\sqrt{c(x)}]' =$$

$$= e^{a(x)} b(x) \frac{c'(x)}{2\sqrt{c(x)}}$$

2) $$\left[a'(x)\, e^{a(x)}\, b(x) + e^{a(x)}\, b'(x)\right]\sqrt{e(x)} - \frac{e^{a(x)}\, b(x)\, e'(x)}{2\sqrt{e(x)}}$$

MULTIPLICAMOS PARA $\sqrt{e(x)}$
E FATORIZAMOS $e^{a(x)}$

$$e^{a(x)}\left[a'(x)\, b(x)\, e(x) + b'(x)\, e(x) - \frac{b(x)\, e'(x)}{2}\right]$$

$$\frac{e^{a(x)}}{2}\left[\underbrace{2a'(x)\, b(x)\, e(x) + 2b'(x)\, e(x) - b(x)\, e'(x)}_{=0}\right]$$

DARÁ MAX E MIN

EXEMPLO

$$e^{-x^2}(x-1) \Big/ \sqrt{(2-x)(x-6)}$$

$a(x) = -x^2$
$b(x) = x-1$
$c(x) = -x2 + 8x - 12$

$a'(x) = -2x$
$b'(x) = 1$
$c'(x) = -2x + 8$

USANDO A FÓRMULA

$2(-2x)(x-1)(-x^2+8x-12)$
$+2(1)(-x^2+8x-12)$
$-(x-1)(-2x+8)$

$(-x^2+8x-12)[-4x^2+4x+2]$
$-(-2x^2+10x-8)$

$4x^4 - 4x^3 \cancel{-2x^2} - 32x^3 + 32x^2 + 16x$
$+48x^2 - 48x - 24$
$\cancel{+2x^2} - 10x + 8$

$4x^4 - 36x^3 + 80x^2 - 42x - 16$

$2x^4 - 18x^3 + 4x^2 - 21x + 8 = 0$