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# Introduction

- Assume  $a = a_-$ ,  $b = a_+$  and  $u$  is  $E[a] = \frac{a_+ + a_-}{2}$ . Using Mathematica 5.2:

## FARRELL – VARIANCE

`Integrate[ (x - u)2, {x, a, b}]`

$$-\frac{a^3}{3} + \frac{b^3}{3} + a^2 u - b^2 u - a u^2 + b u^2$$

`FullSimplify[-\frac{a^3}{3} + \frac{b^3}{3} + a^2 \left(\frac{b+a}{2}\right) - b^2 \left(\frac{b+a}{2}\right) - a \left(\frac{b+a}{2}\right)^2 + b \left(\frac{b+a}{2}\right)^2]`

$$-\frac{1}{12} (a - b)^3$$