

Jensen's inequality

If $f(\alpha a + (1 - \alpha)b) \geq \alpha f(a) + (1 - \alpha)f(b)$

Then $\alpha_1 + \alpha_2 + \alpha_3 = 1; \alpha_k \geq 0$.

$$f(\underbrace{\alpha_1 a_1 + \alpha_2 a_2 + \alpha_3 a_3}_{\mathbb{E}_{p(t)} t}) \geq \underbrace{\alpha_1 f(a_1) + \alpha_2 f(a_2) + \alpha_3 f(a_3)}_{\mathbb{E}_{p(t)} f(t)}$$

$$p(t = a_1) = \alpha_1,$$

$$p(t = a_2) = \alpha_2,$$

$$p(t = a_3) = \alpha_3$$