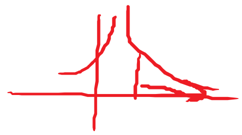
$$\int_1^\infty \frac{1}{(2x-1)^2}\,dx$$



$$\lim_{t\to\infty}\int_1^t \frac{1}{(2x-1)^2}\,dx$$

$u = 2x-1$

$du = 2dx \to dx = \frac{1}{2}du$

$$\lim_{t\to 0}\int \frac{1}{u^2}\,\frac{1}{2}du = \lim_{t\to\infty}\int \frac{u^{-2}}{2}du = \lim_{t\to\infty}\frac{u^{-1}}{-2}\Big|$$

$$= \lim_{t\to\infty}\frac{1}{-2(2x-1)}\Big|_1^t = \lim_{t\to\infty}\underbrace{\frac{-1}{2(2t-1)}}_{\to 0} + \frac{+1}{2(2\cdot 1-1)} = \frac{1}{2}$$

$$\int_{1/2}^3 \frac{1}{(2x-1)^2}\,dx$$

$2x-1=0$

$x = 1/2$

$$\lim_{t\to\frac{1}{2}^+}\int_t^3 \frac{1}{(2x-1)^2}\,dx$$

$u = 2x-1$

$dx = \frac{1}{2}du$

$$= \lim_{t\to\frac{1}{2}}\int \frac{1}{u^2}\,\frac{1}{2}du = \lim_{t\to\frac{1}{2}}\frac{u^{-1}}{-2}\Big|$$

$$= \lim_{t\to\frac{1}{2}} -\frac{1}{2(2x-1)}\Big|_t^3 = \lim_{t\to\frac{1}{2}} -\frac{1}{2(5)} + \underbrace{\frac{+1}{2(2t-1)}}_{\to\infty}$$

$2t-1 \to 0$

∞, diverges