

$$f(x) = \begin{cases} a + \sqrt{x} & x < 1 \\ b\sqrt{x} & x \geq 1 \end{cases} \rightarrow f'(x) = \begin{cases} \frac{1}{2\sqrt{x}} & x < 1 \\ \frac{r}{2} b x^{-1/2} & x \geq 1 \end{cases} \rightarrow f'(1) = \frac{r}{2} b$$

$$\Rightarrow \frac{r}{2} b = 1 \Rightarrow b = \frac{2}{r}$$

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$$f(x) = \frac{|2x-1|}{\sqrt{x}} \rightarrow f'(x) = \frac{-2(\sqrt{x}) - \frac{1}{2\sqrt{x}}}{(\sqrt{x})^2}$$

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$$b = -x^{-r}, x=a, bx+c = \frac{1}{x} \Rightarrow ab+c = \frac{1}{a}, b = -a^{-r}$$

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$$f(x) = \begin{cases} b & x < a \\ b + (x-a)^m & x \geq a \end{cases}$$

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$$f(x) = \frac{1}{\sqrt{x-1x}} \quad g(x) = \frac{1}{x^r - 1x^r}$$

$$g'(-\sqrt{r}) = \frac{-(rx^r + rx^r)}{(rx^r)^2} = \frac{-2rx^r}{r^2 x^{2r}} = \frac{-2}{rx^r} \Rightarrow g'(-\sqrt{r}) = \frac{-2}{r(-\sqrt{r})^r}$$

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$$y = -ax - a \quad x = r \text{ cm} \quad f(r) = -a$$

$$f'(r) - f(r) = r \Rightarrow -a - f(r) = r \Rightarrow -a - (-ra - a) = r$$

$$ra + a = r \Rightarrow ra = r - a \Rightarrow a = \frac{r}{r-1}$$

$$f'(r) = \frac{+r}{r} \Rightarrow \frac{f(r)}{f'(r)} = \frac{\frac{r}{r-1}}{\frac{r}{r}} = -r$$

$$f(r) = \frac{r}{r-1} - a = -\frac{1}{r-1}$$

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$$\lim_{h \rightarrow 0} \frac{(f(a+h) - r)(f(a-h) - 1)}{h(a-h)}$$

$$f(a-h) = (1-h)^{\frac{1}{r-1}}$$

$$\lim_{h \rightarrow 0} f(a-h) = 1$$

$$y = x^r - rx + a \quad y = rx - 1 \Rightarrow y = \frac{1}{r}x - \frac{1}{r} \Rightarrow y' = \frac{1}{r}$$

$$y' = rx - r$$

$$\Rightarrow rx - r = -r \Rightarrow rx = 0 \Rightarrow x = 0$$