5. $y = \sqrt[5]{x}$ $y = x$

POI's

$\sqrt[5]{x} = x$

$(\sqrt[5]{x})^5 = x^5$

$x = x^5$

$0 = x^5 - x$

$0 = x(x^4 - 1)$

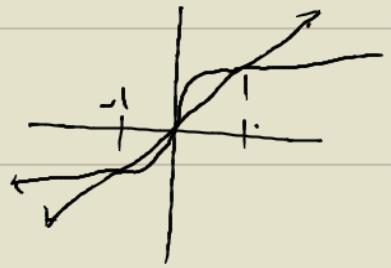
$0 = x(x^2+1)(x^2-1)$

$0 = x(x^2+1)(x+1)(x-1)$

$x = 0 \quad x^2+1 = 0 \quad x+1 = 0 \quad x-1 = 0$

$x^2 = -1$

$x = 0 \quad x = -1 \quad x = 1$



$$\int_{-1}^{0} (x - \sqrt[5]{x})\,dx + \int_{0}^{1} (\sqrt[5]{x} - x)\,dx$$

$$= \int_{-1}^{0} (x - x^{\frac{1}{5}})\,dx + \int_{0}^{1} (x^{\frac{1}{5}} - x)\,dx$$

$$= \left[\frac{1}{2}x^2 - \frac{x^{\frac{1}{5}+1}}{\frac{1}{5}+1}\right]_{-1}^{0} + \left[\frac{x^{\frac{1}{5}+1}}{\frac{1}{5}+1} - \frac{1}{2}x^2\right]_{0}^{1}$$

$$= \left[\frac{1}{2}x^2 - \frac{x^{6/5}}{\frac{6}{5}}\right]_{-1}^{0} + \left[\frac{x^{6/5}}{\frac{6}{5}} - \frac{1}{2}x^2\right]_{0}^{1}$$

$$= \left[\frac{1}{2}x^2 - \frac{5}{6}x^{6/5}\right]_{-1}^{0} + \left[\frac{5}{6}x^{6/5} - \frac{1}{2}x^2\right]_{0}^{1}$$

$$= \left(\frac{1}{2}(0)^2 - \frac{5}{6}(0)^{6/5}\right) - \left(\frac{1}{2}(-1)^2 - \frac{5}{6}(-1)^{6/5}\right) + \left(\frac{5}{6}(1)^{6/5} - \frac{1}{2}(1)^2\right) - \left(\frac{5}{6}(0)^{6/5} - \frac{1}{2}(0)^2\right)$$

$$= -\left(\frac{1}{2} - \frac{5}{6}\right) + \left(\frac{5}{6} - \frac{1}{2}\right)$$

$$= -\frac{1}{2} + \frac{5}{6} + \frac{5}{6} - \frac{1}{2}$$

$$= \frac{10}{6} - 1$$

$$= \frac{5}{3} - 1$$

$$= \frac{5}{3} - \frac{3}{3}$$

$$= \frac{2}{3}$$