Arclength Problems

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Instructions Compute the arclengths of the functions given below.

1. $y = x^{\frac{3}{2}}$ from $(0,0)$ to $(4,8)$ answer: $\frac{8}{27}\left(10\sqrt{10}-1\right)$
2. $x = y^{\frac{3}{2}} + 4$ from $(5,1)$ to $(12,4)$ answer: $\frac{8}{27}\left(10\sqrt{10}-\frac{13\sqrt{13}}{8}\right)$
3. $x = \frac{y^3}{3} + \frac{1}{4y}$ from $\left(\frac{7}{12},1\right)$ to $\left(\frac{67}{24},2\right)$ answer: $\frac{59}{24}$
4. $12xy = 4x^4 + 3$ from ,$\left(1,\frac{7}{12}\right)$ to $\left(3,\frac{109}{12}\right)$ answer: $\frac{53}{6}$