Find the exact length of the curve analytically by antidifferentiation.

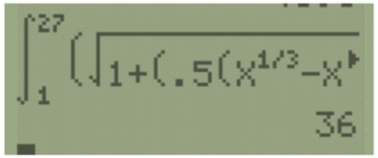
1) $y = \frac{3}{8}(x^{4/3} - 2x^{2/3})$ from $x = 1$ to $x = 27$ 1) ________

A) 93 B) $\frac{87}{2}$ C) $\frac{153}{4}$ D) 36

① $\frac{dy}{dx} = \frac{3}{8}\left(\frac{4}{3}x^{1/3} - \frac{4}{3}x^{-1/3}\right)dx$

$= \frac{1}{2}\left(x^{1/3} - x^{-1/3}\right)$

$L = \int_1^{27} \sqrt{1+\left(\frac{1}{2}\left(x^{1/3} - x^{-1/3}\right)\right)^2}\, dx$



3) $x = \frac{y^4}{8} + \frac{1}{4y^2}$ from $y = 1$ to $y = 2$ $\qquad \frac{1}{4}y^{-2}$ 3) ________

A) $\frac{33}{8}$ B) 2 C) $\frac{33}{16}$ D) $\frac{17}{8}$

$$L = \int_c^d \sqrt{1 + \left(\frac{dx}{dy}\right)^2}\, dy$$

$$\frac{dx}{dy} = \frac{1}{2}y^3 - \frac{1}{2}y^{-3}$$

$$L = \int_1^2 \sqrt{1 + \left(\frac{1}{2}y^3 - \frac{1}{2}y^{-3}\right)^2}\, dy$$