8. $\displaystyle\int_2^4 e^{9x-1}\,dx$

$u = 9x-1 \quad du = 9\,dx$

$= \frac{1}{9}\displaystyle\int_2^4 9e^{9x-1}\,dx$

$= \frac{1}{9}\displaystyle\int_{x=2}^{x=4} e^u\,du$

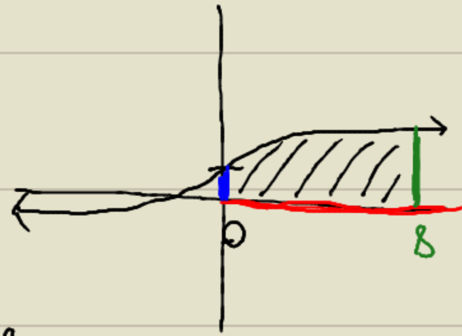
$= \frac{1}{9}\left[e^u\right]_{x=2}^{x=4}$

$= \frac{1}{9}\left[e^{9x-1}\right]_2^4$

$= \frac{1}{9}\left[e^{9\cdot4-1} - e^{9\cdot2-1}\right]$

$= \frac{1}{9}\left[e^{35} - e^{17}\right]$

9. $y = 1 + \sqrt[3]{x}$, $y = 0$, $x = 0$, $x = 8$



$A = \displaystyle\int_0^8 (1 + \sqrt[3]{x})\,dx$

$= \displaystyle\int_0^8 (1 + x^{\frac{1}{3}})\,dx$

$= \left[x + \dfrac{x^{1/3+1}}{1/3+1}\right]_0^8$

$= \left[x + \dfrac{x^{4/3}}{\frac{4}{3}}\right]_0^8$

$= \left[x + \frac{3}{4}x^{4/3}\right]_0^8$

$= \left(8 + \frac{3}{4}(8)^{4/3}\right) - \left(0 + \frac{3}{4}(0)^{4/3}\right)$

$= 8 + \frac{3}{4}\cdot\left(8^{\frac{1}{3}}\right)^4$

$= 8 + \frac{3}{4}\left(\sqrt[3]{8}\right)^4$

$= 8 + \frac{3}{4}\left(\sqrt[3]{2\cdot2\cdot2}\right)^4$

$= 8 + \frac{3}{4}(2)^4$

$= 8 + \frac{3}{4}(16)$

$= 8 + 12$

$= 20$