10. Ako je $A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 6\right)^3-\left(\log_2 12\right)^3+\left(\log_2 24\right)^3\right)$, izračunati vrednost izraza 2^A.

$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 6\right)^3-\left(\log_2 12\right)^3+\left(\log_2 24\right)^3\right)$$
$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 (3\cdot 2)\right)^3-\left(\log_2 (3\cdot 4)\right)^3+\left(\log_2 (3\cdot 8)\right)^3\right)$$
$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 (3\cdot 2)\right)^3-\left(\log_2 (3\cdot 2^2)\right)^3+\left(\log_2 (3\cdot 2^3)\right)^3\right)$$
$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 3+\log_2 2\right)^3-\left(\log_2 3+\log_2 2^2\right)^3+\left(\log_2 3+\log_2 2^3\right)^3\right)$$
$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 3+\log_2 2\right)^3-\left(\log_2 3+2\log_2 2\right)^3+\left(\log_2 3+3\log_2 2\right)^3\right)$$

Pošto je $\log_2 2=1$ tada imamo:

$$A=\frac{1}{6}\left(\left(\log_2 3\right)^3-\left(\log_2 3+1\right)^3-\left(\log_2 3+2\right)^3+\left(\log_2 3+3\right)^3\right)$$

Nakon uvođenja smene : $\log_2 3=t$, dobijamo sledeću jednostavnu jednačinu:

$$A=\frac{1}{6}\left(t^3-(t+1)^3-(t+2)^3+(t+3)^3\right)$$
$$A=\frac{1}{6}\left(t^3-\left(t^3+3t^2+3t+1\right)-\left(t^3+6t^2+12t+8\right)+\left(t^3+9t^2+27t+27\right)\right)$$
$$A=\frac{1}{6}\left(t^3-t^3-3t^2-3t-1-t^3-6t^2-12t-8+t^3+9t^2+27t+27\right)$$
$$A=\frac{1}{6}(12t+18)$$

$A=2t+3$, tada je :

$$2^A=2^{2t+3}$$
$2^A=8\cdot 2^{2t}$, i nakon vraćanja smene

$$2^A=8\cdot 2^{2\log_2 3}$$
$$2^A=8\cdot 2^{\log_2 3^2}$$
$$2^A=8\cdot 2^{\log_2 9}$$
$$2^A=8\cdot 9$$
$$2^A=72$$