

$$a^m \cdot a^n = a^{m+n} \quad \leftarrow$$

$$(a^m)^n = a^{m \cdot n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$(a \cdot b)^m = a^m b^m \quad \checkmark$$

$$\left(\frac{a}{b} \right)^m = \frac{a^m}{b^m} \quad \checkmark$$

$$\frac{(22)^4}{(36)^4} = \frac{2^4 2^4}{3^4 6^4}$$

$$\frac{1}{2^n} = 2^{-n}$$

$$\frac{1}{2^5} \cdot (2 \cdot 2^3)^4 \cdot \frac{1}{4(2^2)^3} = \frac{16 \cdot 2^{12}}{2^5 \cdot 4 \cdot 2^6}$$

$$(a \cdot b)^n = a^n b^n$$

$$2^{-5} \cdot 2^4 \cdot (2^3)^4 \cdot \frac{1}{4^1 \cdot 2^6} =$$

$$(2^n)^m = 2^{n \cdot m}$$

$$2^{-5} \cdot 2^4 \cdot 2^{12} \cdot 4^{-1} \cdot 2^{-6} = 2^4 \cdot 4^{-1} \cdot 2^{-5+12-6}$$

$$= 2^4 \cdot (2^2)^{-1} \cdot 2^1 = 2^{4-2} \cdot 2$$

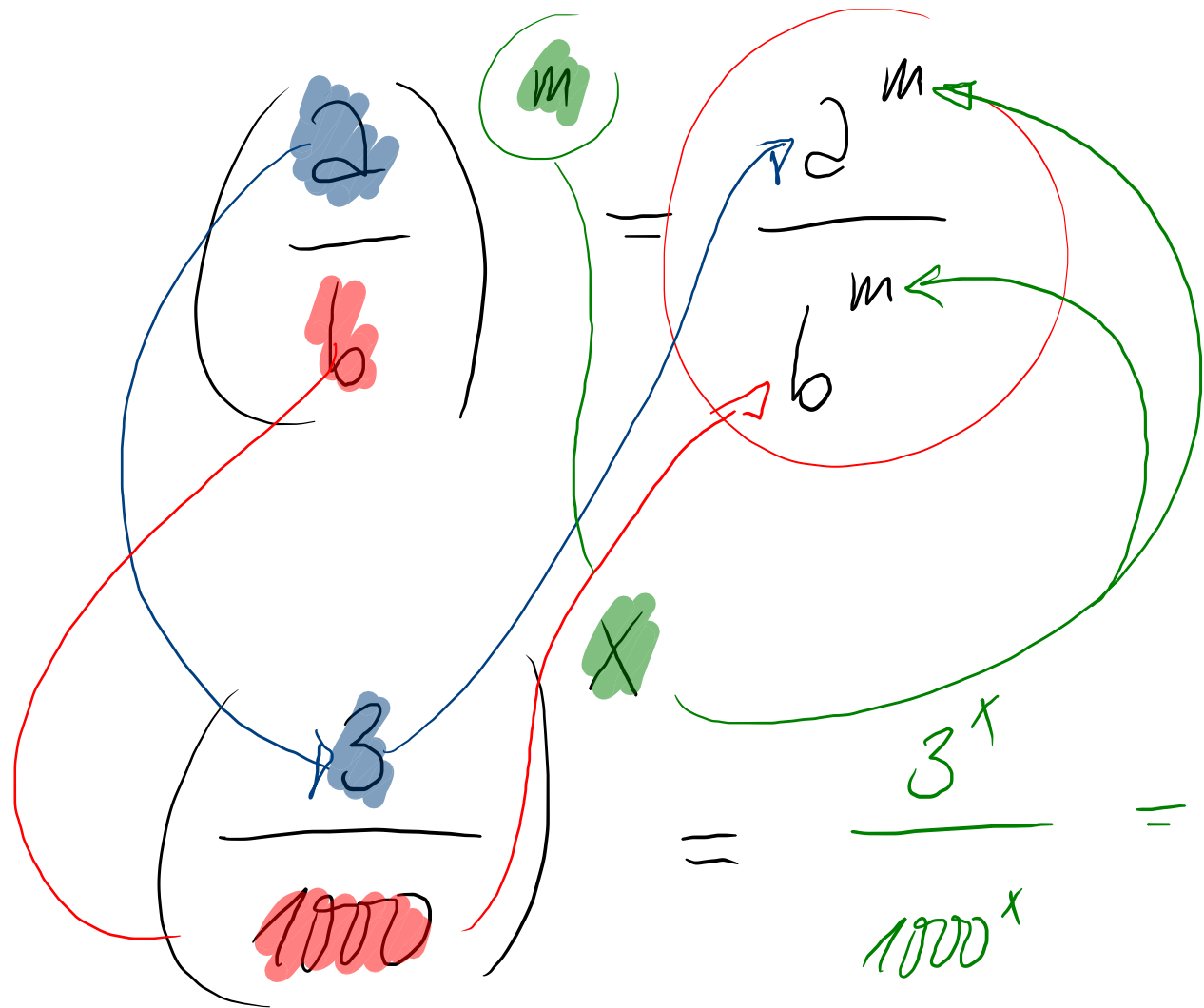
$$= 2^2 \cdot 2 = 4a$$

2 4 8 16 --

2^1 2^2 2^3 2^4 --

3 9 27 81 --

3^1 3^2 3^3 3^4 --



$$(a \cdot b)^n = a^n \cdot b^n$$
$$(2 \cdot 3)^4 = (2 \cdot 3) \cdot (2 \cdot 3) \cdot (2 \cdot 3) \cdot (2 \cdot 3)$$
$$= 2 \cdot 3 \cdot 2 \cdot 3 \cdot 2 \cdot 3 \cdot 2 \cdot 3$$
$$= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$
$$= 2^4 \cdot 3^4$$

$$\text{a) } a - \left(\frac{3}{4} - b\right) \cdot \frac{10}{27} + (a + b) \cdot \frac{30}{38}$$

$$a = \frac{2}{3}, b = \frac{3}{5}$$

$$\frac{2}{3} - \left(\frac{3}{4} - \frac{3}{5}\right) \cdot \frac{10}{27} + \left(\frac{2}{3} + \frac{3}{5}\right) \cdot \frac{30}{38}$$

$$\frac{15-12}{20}$$

$$\frac{10+9}{15}$$

$$\frac{2}{3} - \frac{\cancel{10} \cdot \cancel{10}}{\cancel{20} \cdot \cancel{27} \cdot 9}$$

$$\frac{19}{15}$$

$$\frac{2}{3} - \frac{1}{18} + \frac{1}{15} \cdot \frac{30}{38} = \frac{2}{3} - \frac{1}{18} + \frac{1}{1}$$

$$\frac{1}{2^5} \cdot \frac{(2 \cdot 2^3)^4}{1} \cdot \frac{1}{4(2^2)^3} =$$

$$\frac{1 \cdot (2 \cdot 2^3)^4 \cdot 1}{2^5 \cdot 1 \cdot 4(2^2)^3}$$

$$= \frac{2^4 (2^3)^4}{2^5 \cdot 4 \cdot 2^6}$$

$$= \frac{2^4 \cdot 2^{12}}{4 \cdot 2^{11}} = \frac{2^4}{2^2} \cdot \frac{2^{12}}{2^{11}}$$