VAJA POTENC

I. sklop nalog

1. Dane produkte zapiši kot potence in izračunaj vrednosti.

a) $2 \cdot 2 \cdot 2 \cdot 2 = 2^4 = 16$ b) $8 \cdot 8 = 8^2 = 64$ c) $12 \cdot 12 = 12^2 = 144$ č) $11 \cdot 11 \cdot 11 = 11^3 = 1331$

$3 \cdot 3 \cdot 3 = 3^3 = 27$ $7 \cdot 7 \cdot 7 = 7^3 = 343$ $20 \cdot 20 \cdot 20 = 20^3 = 8000$ $100 \cdot 100 = 100^2 = 10000$

$5 \cdot 5 \cdot 5 = 5^3 = 125$ $10 \cdot 10 \cdot 10 \cdot 10 = 10^4 = 10000$ $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 = 1^5 = 1$ $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 = 6^6 = 46\,656$

2. Dane potence zapiši kot produkte enakih faktorjev in izračunaj njihove vrednosti.

a) $1^2 = 1$ $2^2 = 4$ $5^2 = 25$ $8^2 = 64$ $10^2 = 100$ $15^2 = 225$

b) $1^3 = 1$ $2^3 = 8$ $3^3 = 27$ $5^3 = 125$ $8^3 = 512$ $10^3 = 1000$

c) $4^2 = 16$ $2^4 = 16$ $3^5 = 243$ $1^{10} = 1$ $10^7 = 10\,000\,000$ $2^6 = 64$

Potenci z eksponentom 2 pravimo tudi KVADRAT, operaciji pa KVADRIRANJE. Potenci z eksponentom 3 pravimo KUB, operaciji pa KUBIRANJE.

3. Vstavi ustrezen znak: >, < ali =.

$27 = 3^3 \boxed{>} 2^4 = 16$ $10^1 \boxed{>} 1^{10}$ $25 = 5^2 \boxed{<} 2^5 = 32$

$36 = 6^2 \boxed{<} 5^3 = 125$ $0^5 \boxed{=} 0^{12}$ $1^7 \boxed{=} 1^1$

4. Zapiši v obliki potence.

a) $x \cdot x = x^2$ c) $b \cdot b \cdot b \cdot b \cdot b = b^5$ d) $d = d^1$

b) $a \cdot a \cdot a = a^3$ č) $c \cdot c \cdot c \cdot c = c^4$ e) $y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y = y^7$

II. sklop nalog:

1. Izračunaj vrednosti potenc.
V primeru a) zapiši najprej produkt enakih faktorjev, nato izračunaj vrednost.

a) $1^6 = 1$ $3^5 = 125$ $2^5 = 32$ $7^4 = 2401$ $4^1 = 4$ $10^2 = 100$

b) $0{,}2^2 = 0{,}04$ $1{,}1^3 = 1{,}331$ $2{,}5^2 = 6{,}25$ $0{,}8^3 = 0{,}512$ $0{,}05^2 = 0{,}0025$ $0{,}2^4 = 0{,}0016$

c) $\left(\frac{1}{2}\right)^5 = \frac{1}{32}$ $\left(\frac{3}{5}\right)^3 = \frac{27}{125}$ $\left(\frac{2}{7}\right)^4 = \frac{16}{2401}$ $\left(1\frac{1}{4}\right)^3 = \frac{125}{64} = 1\frac{61}{64}$ $\left(2\frac{2}{3}\right)^2 = \frac{64}{9} = 7\frac{1}{9}$ $\left(5\frac{7}{10}\right)^1 = 5\frac{7}{10}$

č) $(-2)^5 = -32$ $(-2)^6 = 64$ $(-10)^2 = 100$ $(-5)^3 = -125$ $(-7)^2 = 49$ $(-7)^3 = -343$

d) $(-1{,}5)^2 = 2{,}25$ $(-0{,}8)^3 = -0{,}512$ $(-1{,}2)^1 = -1{,}2$ $\left(-\frac{2}{9}\right)^2 = \frac{4}{81}$ $\left(-\frac{1}{2}\right)^7 = -\frac{1}{128}$ $\left(-3\frac{3}{4}\right)^2 = \frac{225}{16} = 14\frac{1}{16}$

2. Zapiši dana števila kot potence.

a) $2 = 2^1$ $4 = 2^2$ $8 = 2^3$ $16 = 2^4$ $64 = 2^6$ $128 = 2^7$

b) $36 = 6^2$ $49 = 7^2$ $81 = 9^2$ $125 = 5^3$ $1000 = 10^3$ $100\,000 = 10^5$

3. Vstavi ustrezno število.

$4^{\boxed{2}} = 16$ $\boxed{2}^3 = 8$ $9^2 = \boxed{81}$

$10^{\boxed{4}} = 10\,000$ $\boxed{1}^{15} = 1$ $0^7 = \boxed{0}$

III. sklop nalog:

1. Izračunaj vrednosti potenc in obkroži tiste, ki so manjše od nič.

a) $4^3 = 64$ $\quad -4^3 = -64$ $\quad (-4)^3 = -64$ $\quad 5^4 = 625$ $\quad (-5)^4 = 625$ $\quad -5^4 = -625$

b) $\boxed{\left(-\frac{1}{2}\right)}^3 = -\frac{1}{8}$ $\quad -\boxed{\left(\frac{1}{2}\right)}^3 = -\frac{1}{8}$ $\quad -\frac{\boxed{1}}{2}^3 = -\frac{1}{2}$ $\quad \left(-2\frac{2}{5}\right)^2 = \frac{144}{25} = 5\frac{19}{25}$ $\quad -\left(2\frac{2}{5}\right)^2 = -5\frac{19}{25}$ $\quad -2\frac{2^2}{5} = -2\frac{4}{5}$

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2. Brez računanja ugotovi, v katerih primerih je vrednost potence negativna.

a) 6^8 $\quad (-6)^8$ $\quad 9^5$ $\quad (-9)^5$ $\quad -9^5$ $\quad -6^8$

b) $-\left(\frac{2}{3}\right)^9$ $\quad \left(-\frac{2}{3}\right)^9$ $\quad -\frac{2}{3}^9$ $\quad (-10)^2$ $\quad (-10)^3$ $\quad -10^4$

3. V prazen kvadratek vstavi ustrezno število.

a) $3^{\boxed{4}} = 81$ $\quad$ b) $\boxed{1}^{41} = 1$ $\quad$ c) $5^{\boxed{4}} = 625$

č) $\boxed{-2}^5 = -32$ $\quad$ d) $0{,}02^{\boxed{2}} = 0{,}0004$ $\quad$ e) $\boxed{-2}^3 = -8$