

## SOLUÇÕES

1.1.  $-(12-8)-(-6)\div(-3)=-(+4)-(+2)=-4-2=-6$

1.2.  $-100-5\times(20-15)=-100-5\times 5=-100-25=-125$

1.3.  $(-12)\div(-6)\times(-8)-(-16)=2\times(-8)+16=-16+16=0$

1.4.  $(-4)\times(-3)-(+15)=12-15=-3$

2.1.  $3-2\times(-6+8)=3+12-16=15-16=-1$

2.2.  $-3\times(-2+6-1)-(+2)=6-18+3-2=-12+3-2=-9-2=-11$

2.3.  $-4\times(-1+5)-(-6)\div 2=4-20-(-3)=4-20+3=-16+3=-13$

3.1.  $(-12)^{30}\times(-12)^{60}\div 6^{90}=(-12)^{90}\div 6^{90}=(-12\div 6)^{90}=(-3)^{90}=3^{90}$

3.2.  $(-7)^{600}\div(-7)^{400}\times[(-3)^{100}]^2=(-7)^{600}\div(-7)^{400}\times(-3)^{200}=(-7)^{200}\times(-3)^{200}=[(-7)\times(-3)]^{200}=21^{200}$

3.3. 
$$\frac{[(-30)^2]^{15}\div(-3)^{30}\times(-1999)^0}{(-2)^{10}\times(-5)^{10}\div 10^5}=\frac{(-30)^{30}\div(-3)^{30}\times 1}{[(-2)\times(-5)]^{10}\div 10^5}=\frac{[(-30)\div(-3)]^{30}\times 1}{10^{10}\div 10^5}=\frac{10^{30}\times 1}{10^5}=\frac{10^{30}}{10^5}=10^{30-5}=10^{25}$$

4. (A). Nota:  $\left(\frac{1}{n^2}\right)^3=(n^{-2})^3=n^{-2\times 3}=n^{-6}$

5. (C). Nota:  $\frac{1}{n^6}\times(n^2)^4=n^{-6}\times n^{2\times 4}=n^{-6}\times n^8=n^{-6+8}=n^2$

6.1.  $(\sqrt{7})^2-2\sqrt{36}+\sqrt[3]{4}\times\sqrt[3]{2}=7-2\times 6+\sqrt[3]{8}=7-12+2=-5+2=-3$

6.2.  $\sqrt[3]{-8}-\sqrt{27}\times\sqrt{3}-\left(\sqrt{(-1)^{120}+2^2}\right)^2=-2-\sqrt{81}-\left(\sqrt{1+4}\right)^2=-2-9-(\sqrt{5})^2=-11-5=-16$

6.3.  $\sqrt{100}-3\sqrt{64}-\sqrt[3]{5^3}=10-3\times 8-5=10-24-5=-14-5=-19$

7. (D). Nota:  $\sqrt{a^2}+(b^2)^0+(-1)^{13}=a+b^{2\times 0}+(-1)=a+b^0-1=a+b^0-1=a+1-1=a$ .

8.1.  $(6^0)^3-2^{-3}=6^{0\times 3}-\frac{1}{2^3}=6^0-\frac{1}{8}=1-\frac{1}{8}=\frac{8}{8}-\frac{1}{8}=\frac{7}{8}$

8.2.  $(-2)^3\times 16^{-1}+(-1)^{120}=-8\times\frac{1}{16}+1=-\frac{8}{16}+1=-\frac{8}{16}+\frac{16}{16}=\frac{8}{16}=\frac{1}{2}$

8.3.  $3^{-2}-(-1)^{2013}\times 2=\frac{1}{3^2}-(-1)\times 2=\frac{1}{9}+2=\frac{1}{9}+\frac{18}{9}=\frac{19}{9}$

9. (C). Nota:  $\frac{1}{5^3}\div 5^6=5^{-3}\div 5^6=5^{-3-6}=5^{-9}$ .

10.  $l_{\square} = \overline{AB} = \sqrt{81} = 9$ ;  $\overline{BE} = \frac{1}{3}\overline{AB} = \frac{1}{3} \times 9 = 3$ ;  $P_{[BCEF]} = P_{\square} = 2 \times \overline{BC} + 2 \times \overline{BE} = 2 \times 9 + 2 \times 3 = 18 + 6 = 24$ .

11. (C) Nota:  $aresta = \sqrt[3]{216} = 6 \text{ cm}$ ;  $A_{face} = A_{\square} = 6^2 = 36$ .

12.  $aresta = \sqrt[3]{3375} = 15 \text{ cm}$  logo  $\overline{AD} = \overline{AB} = 15 \text{ cm}$ ;  $l_{[AHJ]} = \sqrt{36} = 6 \text{ cm}$ , ou seja,  $\overline{AJ} = 6 \text{ cm}$  e  $\overline{FE} = 6 \text{ cm}$ ;  $\overline{IK} = 15 - 2 \times 6 = 15 - 12 = 3 \text{ cm}$ , deste modo  $P_{[AHJ]} = P_{\square} = 4 \times 3 = 12 \text{ cm}$ .

13.1.  $P_{\square} = 12$  logo  $l_{\square} = \frac{12}{4} = 3$ ;  $A_{\square} = 3 \times 3 = 9$ , como o 3.º termo tem 11 quadrados  $A_{3.º \text{ termo}} = 11 \times A_{\square} = 11 \times 9 = 99$ .

13.2. O 101.º termo tem 102 quadrados pretos. Termo geral do número de quadrados do termo de ordem  $n$ :  $3n + 2$ . Deste modo,  $3 \times 101 + 2 = 305$ , ou seja, o 101.º termo tem 305 quadrados.

13.3. (B)

14.1. 23 bolas pretas.

14.2. (B)

14.3.  $511 - 1 = 510$ . 510 é múltiplo de três.  $510 \div 3 = 170$ . O termo de ordem 170 (ou seja, o 170.º termo) tem 511 bolas.

15. (D). Nota:  $f(0) = -\frac{0}{2} + 5 = 5$ .

16. (B). Nota:  $f(-2) = 7 - 3 \times (-2) = 1 + 6 = 13$ .

17.1. (A)

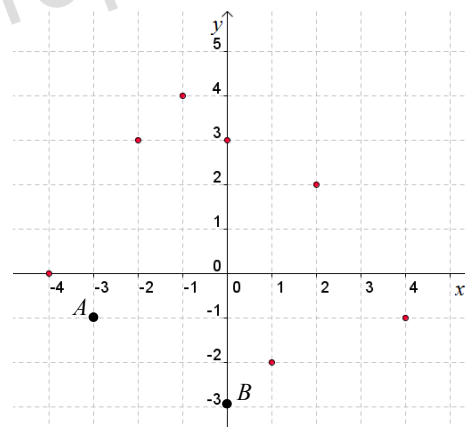
17.2.  $D_f = \{-4, -2, -1, 0, 1, 2, 4\}$

17.3. -2 e 0.

17.4.1.  $f(4) = -1$

17.4.2.  $f(-4) = 0$

18. Ver o referencial cartesiano ao lado.



19.1.  $D_g = \{0, 1, 2, 3, 4, 5, 6\}$

19.2. Na primeira semana.

19.3.  $g(6) = 4,5$ . Ao fim de seis semanas o recém-nascido pesava 4,5 kg.

19.4. 0,5 kg