

MAY 1 1.10.2026

1. a) $(-3) \cdot (-2) \cdot 4 \cdot (-5) = -(3 \cdot 2) \cdot (4 \cdot 5) = -6 \cdot 20 = \underline{-120}$
 b) $2 \cdot (1-3) + (-3)^2 \cdot 4 - 1 = 2 \cdot (-2) + 9 \cdot 4 - 1 = -4 + 36 - 1 = \underline{31}$

1'. a) $5(2x-3) = 2(4x+1) - 3 \Leftrightarrow 10x - 15 = 8x + 2 - 3 \Leftrightarrow 2x = 14 \quad | :2 \Leftrightarrow \underline{x=7}$
 b) $6(1-x) = 2(4-3x) - 2 \Leftrightarrow 6 - 6x = 8 - 6x - 2 \Leftrightarrow 0 = 0 \quad \% \text{ toton}$
 $\Rightarrow$ kaikki realluvut x toteuttavat yhtälön

2. a) $\frac{4}{3} - \frac{1}{2} + \frac{5}{6} = \frac{8}{6} - \frac{3}{6} + \frac{5}{6} = \frac{8-3+5}{6} = \frac{10}{6} = \underline{\frac{5}{3}}$
 b) $\frac{3}{4} \cdot \frac{20}{9} = \frac{3 \cdot 20}{4 \cdot 9} = \underline{\frac{5}{3}}$
 c) $\frac{5}{2} : 3 \frac{3}{4} = \frac{5}{2} : \frac{15}{4} = \frac{5}{2} \cdot \frac{4}{15} = \frac{5 \cdot 4}{2 \cdot 15} = \underline{\frac{2}{3}}$

2'. a) $2x^2 - 18 = 0 \Leftrightarrow 2x^2 = 18 \quad | :2 \Leftrightarrow x^2 = 9 \quad \sqrt{\quad} \Leftrightarrow \underline{x = \pm 3}$
 b) $2^0 + 2^{-1} + 2^{-2} = 1 + \frac{1}{2} + \frac{1}{2^2} = 1 + \frac{2}{2} + \frac{1}{4} = \frac{4}{4} + \frac{2}{4} + \frac{1}{4} = \frac{4+2+1}{4} = \underline{\frac{7}{4}}$

3. a) $y^4 \cdot y^3 = y^{4+3} = \underline{y^7}$ b) $(a^3)^4 = a^{3 \cdot 4} = \underline{a^{12}}$
 c) $\frac{(2a^2)^4}{a^3 \cdot a^2} = \frac{2^4 \cdot (a^2)^4}{a^{3+2}} = \frac{16 \cdot a^{2 \cdot 4}}{a^5} = 16 \cdot \frac{a^8}{a^5} = 16 \cdot a^{8-5} = \underline{16a^3}$

3'. $\begin{cases} 2x + 3y = 8 \\ 4x - y = 30 \end{cases} \quad | \cdot 3 \quad \Leftrightarrow \begin{cases} 2x + 3y = 8 \\ 12x - 3y = 90 \end{cases}$
 $14x = 98 \quad | :14 \quad \Leftrightarrow \underline{x = 7}$
 $\Rightarrow 4 \cdot 7 - y = 30 \quad \Leftrightarrow y = 28 - 30 \quad \Leftrightarrow \underline{y = -2}$
 Tark. $\begin{cases} 2 \cdot 7 + 3 \cdot (-2) = 8 \\ 4 \cdot 7 - (-2) = 30 \end{cases} \quad \Leftrightarrow \begin{cases} 14 - 6 = 8 \\ 28 + 2 = 30 \end{cases} \quad \%$

4. a) $f(x) = 20 + 4x$
 b) $f(x) = 20 + 4x = 50$
 $\Rightarrow 4x = 30 \quad | :4 \quad \Leftrightarrow \underline{x = 7,5 \text{ (litroa)}}$

