1)

a) $\sqrt{34} = \sqrt{2} \cdot \sqrt{17} \Leftrightarrow 1,4 \cdot 4,1 \simeq 5,74$

$\sqrt{2} = 1,4 \quad \sqrt{16} = 4 \quad \sqrt{17} \simeq 4,1$

b) $\sqrt{86} = \sqrt{2} \cdot \sqrt{43} \Leftrightarrow 1,4 \cdot 6,4 \simeq 8,96$

$\sqrt{2} = 1,4 \quad \sqrt{36} = 6 \quad \sqrt{43} \simeq 6,4$

c) $\sqrt[3]{243} = \sqrt[3]{3^3 3^2} = 3\sqrt[3]{3^2} = 3\sqrt[3]{9}$

d) $\frac{\sqrt[3]{485}}{\sqrt[3]{5}} = \sqrt[3]{5} \cdot \sqrt[3]{97} \Leftrightarrow 1,8 \cdot 4,7 \simeq 8,46$

$\sqrt[3]{5} = 1,8 \quad \sqrt[3]{97} = 4,7$

e) $\sqrt[3]{144} = 12$

2)

a) $(x^2+3x+8)+(5x^2+9x+3) = 6x^2+12x+11$

b) $(x^3+2x^2-4x+3)-(9x^3+4x^2+2x-5)$

$x^3+2x^2-4x+3-9x^3-4x^2-2x+5$

$-8x^3-2x^2-6x+8$

c) $(12x^2+3x+7)+(8x^2+10x+12) = 20x^2+13x+19$

d) $(15x^3+9x^2+12x+8)+(-9x^3+2x^2-4x-9)$

$6x^3+11x^2+8x-1$

e) $(13x^2+9x+12)-(4x^3+9x^2+13x+12)$

$13x^2+9x+12-4x^3-9x^2-13x-12$

$-4x^3+4x^2-4x$

3)

a) $(x+2)\cdot(x+3) = x^2+3x+2x+6 = x^2+5x+6$

b) $(x-4)\cdot(x+8) = x^2+8x-4x-32 = x^2+4x-32$

c) $(x^2+2x+7)\cdot(x+12) = x^3+12x^2+2x^2+24x+7x+84$
$x^3+14x^2+31x+84$

d) $(x^3+8x^2+13x+12)\cdot(x^2+2x-4)$:

$$\begin{array}{r} x^3+8x^2+13x+12 \\ \hline x^2+2x-4 \\ \hline x^5+2x^4-4x^3 \\ 8x^4+16x^3-32x^2 \\ 13x^3+26x^2-52x \\ 12x^2+24x-48 \end{array}$$

$x^5+10x^4+25x^3+6x^2-28x-48$

e) $(12x^2+9x-4)\cdot(4x^3+9x+12) = 48x^5+109x^3+144x^2+36x^2$
$81x^2+108x-16x^3-35x-48$
$48x^5+35x^4+92x^3+255x^2+72x-48$

4)

a) 19 { CO: 4, CA: 3, h: 5 } 20 { 8, 7, $\sqrt{113}$ } 21 { 12, 5, 13 } 22 { 8, 15, 17 }

23 { CO: 7, CA: 11, h: $\sqrt{170}$ } 24 { 6, $2\sqrt{7}$, 8 } 25 { $\sqrt{97}$, 8, 11 } 26 { 9, $2\sqrt{22}$, 13 }

b) 19 $\begin{cases} \operatorname{sen}\theta = \frac{4}{5} \\ \cos\theta = \frac{3}{5} \\ \operatorname{tg}\theta = \frac{4}{3} \end{cases}$ $\begin{cases} \operatorname{cot}\theta = \frac{3}{4} \\ \operatorname{csc}\theta = \frac{5}{4} \\ \sec\theta = \frac{5}{3} \end{cases}$

20 $\begin{cases} \operatorname{sen}\theta = \frac{8}{\sqrt{113}} \\ \cos\theta = \frac{7}{\sqrt{113}} \\ \operatorname{tg}\theta = \frac{8}{7} \end{cases}$ $\begin{cases} \operatorname{cot} = \frac{7}{8} \\ \operatorname{csc} = \frac{\sqrt{113}}{8} \\ \sec\theta = \frac{\sqrt{113}}{7} \end{cases}$

21 $\begin{cases} \operatorname{sen}\theta = \frac{12}{13} \\ \cos\theta = \frac{5}{13} \\ \operatorname{tg}\theta = \frac{12}{5} \end{cases}$ $\begin{cases} \operatorname{cotg}\theta = \frac{5}{12} \\ \operatorname{csc}\theta = \frac{13}{12} \\ \sec\theta = \frac{13}{5} \end{cases}$

22 $\begin{cases} \operatorname{sen}\theta = \frac{8}{17} \\ \cos\theta = \frac{15}{17} \\ \operatorname{tg}\theta = \frac{8}{15} \end{cases}$ $\begin{cases} \operatorname{cot}\theta = \frac{15}{8} \\ \operatorname{csc}\theta = \frac{17}{8} \\ \sec\theta = \frac{17}{15} \end{cases}$

23 $\begin{cases} \operatorname{sen}\theta = \frac{7}{\sqrt{170}} \\ \cos\theta = \frac{11}{\sqrt{170}} \\ \operatorname{tg}\theta = \frac{7}{11} \end{cases}$ $\begin{cases} \operatorname{cot}\theta = \frac{11}{7} \\ \operatorname{csc}\theta = \frac{\sqrt{170}}{7} \\ \sec\theta = \frac{\sqrt{170}}{11} \end{cases}$

24 $\begin{cases} \operatorname{sen}\theta = \frac{3}{4} \\ \cos\theta = \frac{\sqrt{7}}{4} \\ \operatorname{tg}\theta = \frac{3}{\sqrt{7}} \\ \operatorname{cot}\theta = \frac{\sqrt{7}}{3} \\ \operatorname{csc}\theta = \frac{4}{3} \\ \sec\theta = \frac{4}{\sqrt{7}} \end{cases}$

25 $\begin{cases} \operatorname{sen}\theta = \frac{\sqrt{57}}{11} \\ \cos\theta = \frac{8}{11} \\ \operatorname{tg}\theta = \frac{\sqrt{57}}{8} \end{cases}$ $\begin{cases} \operatorname{cot}\theta = \frac{8}{\sqrt{57}} \\ \operatorname{csc}\theta = \frac{11}{\sqrt{57}} \\ \sec\theta = \frac{11}{8} \end{cases}$

26 $\begin{cases} \operatorname{sen}\theta = \frac{9}{13} \\ \cos\theta = \frac{2\sqrt{22}}{13} \end{cases}$ $\operatorname{tg}\theta = \frac{9}{2\sqrt{22}}$ $\operatorname{cot}\theta = \frac{2\sqrt{22}}{9}$ $\operatorname{csc}\theta = \frac{13}{9}$ $\sec\theta = \frac{13}{2\sqrt{22}}$

a) $\frac{\sqrt{34}}{\sqrt{2}} = \sqrt{\frac{34}{2}} = \sqrt{17} = \sqrt{2} \cdot \sqrt{17}$

$\sqrt{2} \approx 1,4 \quad \sqrt{16} = 4 \quad \sqrt{17} \approx 4,1$

b) $\frac{\sqrt{35}}{\sqrt{2}} = \sqrt{\frac{35}{2}} = \sqrt{17,5} \Leftrightarrow 1,4 \cdot 6,3 =$

$\sqrt{2} = 1,4 \quad \sqrt{35} = 6 \quad \sqrt{43} \approx 6,3$

c) $\sqrt[3]{243} = 243 \mid 3 \quad =$

$81 \mid 3 \quad 3^3$

$27 \mid 3 \quad 3^2$

$9 \mid 3$

$3 \mid 3$

$1 \mid$

d) $\frac{\sqrt[3]{485}}{\sqrt[3]{5}} = \sqrt[3]{\frac{5}{5}} \cdot \sqrt[3]{97} = 1 \cdot \sqrt[3]{97}$

$\sqrt[3]{5} = 1,8 \quad \sqrt[3]{97} \approx 4,6 \quad \sqrt{100} = 10 \quad \sqrt{97} = 9,8$

e) $\sqrt{144} = 12 \cdot 12 = 144$

a) $(x^2 + 3x + 8) + (5x^2 + 9x + 2) = 6x^2 + 12x + 11$

b) $(x^3 + 2x^2 - 4x + 3) - (9x^3 + 4x^2 + 2x - 5)$

$x^3 + 2x^2 - 4x + 3 - 9x^3 - 4x^2 - 2x^2 + 5$

$-8x^3 - 2x2 - 6x + 8$

c) $(12x^2 + 3x + 7) + (8x^2 + 10x + 12)$

$20x^2 + 13x + 19$

d) $(15x^3 + 9x^2 + 12x + 8) + (-9x^3 + 2x^2 - 4x - 9)$

/ /

e) $(13x^2+9x+12)-(4x^3+9x^2+13x+12)$

$13x^2+9x+12-4x^3-9x^2-13x-12$

$-4x^3+4x^2-4x$

3)

a) $(x+2)\cdot(x+3) = x^2+3x+2x+6$

b) $(x-4)(x+8) = x^2+8x-4x-32 = x^2+4x-32$

c) $(x^2+2x+7)(x+12) = x^3+12x^2+2x^2+24x+7x+84$

$x^3+14x^2+31x+84$

d) $x^3+8x^2+13x+12$

x^2+2x-4

$x^5+2x^4-4x^3$

$8x^4+16x^3-32x^2$

$13x^3+26x^2-52x$

$12x^2+24x-48$

$x^5+10x^4+25x^3+6x^2-28x-48$

4)

23) $h^2 = 7^2+11^2 = 49+121 = \sqrt{170}$

24) $18^2 = 6^2+x^2 = 64-35 = x^2 = \sqrt{28}$

25) $11^2 = 8^2+x^2 = 121-64 = x^2$ $\sqrt{57}$

25) $13^2 = x^2+9^2 = 169-81 = 2\sqrt{22}$