

ÔN TẬP CHƯƠNG I

Bài tập 1: Rút gọn các biểu thức sau:

$$a) \sqrt{180} + \sqrt{5} - 2\sqrt{80} \quad b) \sqrt{(2\sqrt{7}+2)^2} + \sqrt{(2\sqrt{7}-6)^2} \quad c) \frac{4}{\sqrt{7}+\sqrt{3}} - \frac{4}{\sqrt{7}-\sqrt{3}}$$

Giải:

$$\begin{aligned} a) \sqrt{180} + \sqrt{5} - 2\sqrt{80} &= \sqrt{36 \cdot 5} + \sqrt{5} - 2\sqrt{16 \cdot 5} \\ &= 6\sqrt{5} + \sqrt{5} - 8\sqrt{5} \\ &= -\sqrt{5} \end{aligned}$$

$$\begin{aligned} b) \sqrt{(2\sqrt{7}+2)^2} + \sqrt{(2\sqrt{7}-6)^2} &= |2\sqrt{7}+2| + |2\sqrt{7}-6| \\ &= (2\sqrt{7}+2) + (6-2\sqrt{7}) \\ &= 2\sqrt{7}+2+6-2\sqrt{7} \\ &= 8 \end{aligned}$$

$$\begin{aligned} c) \frac{4}{\sqrt{7}+\sqrt{3}} - \frac{4}{\sqrt{7}-\sqrt{3}} &= \frac{4(\sqrt{7}-\sqrt{3})}{(\sqrt{7}+\sqrt{3})(\sqrt{7}-\sqrt{3})} - \frac{4(\sqrt{7}+\sqrt{3})}{(\sqrt{7}-\sqrt{3})(\sqrt{7}+\sqrt{3})} \\ &= \frac{4(\sqrt{7}-\sqrt{3}) - 4(\sqrt{7}+\sqrt{3})}{(\sqrt{7}+\sqrt{3})(\sqrt{7}-\sqrt{3})} \\ &= \frac{4\sqrt{7} - 4\sqrt{3} - 4\sqrt{7} - 4\sqrt{3}}{(\sqrt{7})^2 - (\sqrt{3})^2} \\ &= \frac{-8\sqrt{3}}{4} = -2\sqrt{3} \end{aligned}$$

Bài tập 2: Rút gọn các biểu thức sau:

$$A = \frac{2}{\sqrt{7}-\sqrt{6}} - \sqrt{28} + \sqrt{54}$$

$$B = \sqrt{(2-\sqrt{3})^2} + \sqrt{3}$$

$$C = \frac{1}{\sqrt{3}+1} + \frac{1}{\sqrt{3}-1} + \frac{2\sqrt{2}-\sqrt{6}}{\sqrt{2}}$$

$$D = \sqrt{6+2\sqrt{5}} - \sqrt{6-2\sqrt{5}}$$

$$E = \frac{1}{\sqrt{2}+1} - \frac{\sqrt{8}-\sqrt{10}}{2-\sqrt{5}}$$

$$F = \sqrt{7-2\sqrt{10}} + \sqrt{20} + \frac{1}{2}\sqrt{8}$$

$$H = \left(\frac{5-\sqrt{5}}{\sqrt{5}} - 5 \right) \left(\frac{\sqrt{5}+5}{\sqrt{5}+1} + 6 \right)$$

GIẢI:

$$\begin{aligned}A &= \frac{2}{\sqrt{7}-\sqrt{6}} - \sqrt{28} + \sqrt{54} \\&= \frac{2(\sqrt{7}+\sqrt{6})}{(\sqrt{7}-\sqrt{6})(\sqrt{7}+\sqrt{6})} - \sqrt{7.4} + \sqrt{9.6} \\&= \frac{2\sqrt{7}+2\sqrt{6}}{7-6} - 2\sqrt{7} + 3\sqrt{6} \\&= 2\sqrt{7} + 2\sqrt{6} - 2\sqrt{7} + 3\sqrt{6} \\&= 5\sqrt{6}\end{aligned}$$

$$\begin{aligned}E &= \frac{1}{\sqrt{2}+1} \cdot \frac{\sqrt{8}-\sqrt{10}}{2-\sqrt{5}} = \frac{\sqrt{2}-1}{2-1} \cdot \frac{\sqrt{2}(\sqrt{4}-\sqrt{5})}{2-\sqrt{5}} \\&= \sqrt{2}-1-\sqrt{2}=-1 \\F &= \sqrt{7-2\sqrt{10}} + \sqrt{20} + \frac{1}{2}\sqrt{8} \\&= \sqrt{(\sqrt{5}-\sqrt{2})^2} + 2\sqrt{5} + \frac{1}{2} \cdot 2\sqrt{2} \\&= |\sqrt{5}-\sqrt{2}| + 2\sqrt{5} + \sqrt{2} \\&= \sqrt{5}-\sqrt{2} + 2\sqrt{5} + \sqrt{2} \text{ (Do } \sqrt{5}-\sqrt{2} > 0) \\&= 3\sqrt{5}\end{aligned}$$

$$\begin{aligned}B &= \sqrt{(2-\sqrt{3})^2} + \sqrt{3} \\&= |2-\sqrt{3}| + \sqrt{3} = 2 \text{ (do } 2 > \sqrt{3}) \\C &= \frac{1}{\sqrt{3}+1} + \frac{1}{\sqrt{3}-1} + \frac{2\sqrt{2}-\sqrt{6}}{\sqrt{2}} \\C &= \frac{\sqrt{3}-1+\sqrt{3}+1}{(\sqrt{3}+1)(\sqrt{3}-1)} + \frac{\sqrt{2}(2-\sqrt{3})}{\sqrt{2}} \\&= \frac{2\sqrt{3}}{3-1} + 2 - \sqrt{3} \\&= \sqrt{3} + 2 - \sqrt{3} = 2\end{aligned}$$

$$\begin{aligned}D &= \sqrt{6+2\sqrt{5}} - \sqrt{6-2\sqrt{5}} \\&= \sqrt{5+2\sqrt{5}+1} - \sqrt{5-2\sqrt{5}+1} \\&= \sqrt{(\sqrt{5}+1)^2} - \sqrt{(\sqrt{5}-1)^2} \\&= |\sqrt{5}+1| - |\sqrt{5}-1| \\&= \sqrt{5}+1 - \sqrt{5}+1 = 2\end{aligned}$$

$$\begin{aligned}H &= \left(\frac{5-\sqrt{5}}{\sqrt{5}} - 5 \right) \left(\frac{\sqrt{5}+5}{\sqrt{5}+1} + 6 \right) \\&= \left(\frac{\sqrt{5}(\sqrt{5}-1)}{\sqrt{5}} - 5 \right) \left(\frac{\sqrt{5}(1+\sqrt{5})}{\sqrt{5}+1} + 6 \right) \\&= (\sqrt{5}-6)(\sqrt{5}+6) = 5-36 = -31\end{aligned}$$

Bài tập 3: Giải phương trình

1) $\sqrt{3} + 2x = 5$ đk: $x \geq \frac{-3}{2}$

$$\Leftrightarrow 3 + 2x = 25$$

$$\Leftrightarrow 2x = 22$$

$$\Leftrightarrow x = 11 \text{ (t/m)}$$

Vậy $x = 11$

2) $\sqrt{(x-2)^2} = 8$

$$\Leftrightarrow |x-2| = 8$$

TH1: $x-2=8$ TH2: $x-2=-8$

$\Leftrightarrow x = 10$ $\Leftrightarrow x = -6$

Vậy $x = 10$ hoặc $x = -6$

3) $\sqrt{3-x} - \sqrt{27-9x} + \frac{5}{4}\sqrt{48-16x} = 6$ đk: $x \leq 3$

$$\Leftrightarrow \sqrt{3-x} - \sqrt{9(3-x)} + \frac{5}{4}\sqrt{16(3-x)} = 6$$

$$\Leftrightarrow \sqrt{3-x} - 3\sqrt{3-x} + 5\sqrt{3-x} = 6$$

$$\Leftrightarrow 3\sqrt{3-x} = 6$$

$$\Leftrightarrow \sqrt{3-x} = 2$$

$$\Leftrightarrow 3-x = 4 \Leftrightarrow x = -1 \text{ (t/m)}$$

4) $\sqrt{4x^2+12x+9} = 4$

$$\Leftrightarrow \sqrt{(2x+3)^2} = 4$$

$$\Leftrightarrow |2x+3| = 4$$

TH1: $2x+3=4$ TH2: $2x+3=-4$

$\Leftrightarrow 2x=1$ $\Leftrightarrow 2x=-7$

$\Leftrightarrow x=1/2$ $\Leftrightarrow x=-7/2$

Vậy $x = 1/2$ hoặc $x = -7/2$

Dặn dò:

- Ghi chép bài đầy đủ

- Ôn lại những bài đã giải