Answer key

The method: Rationalizing the denominator

Multiply the top and the bottom by the root, or by the conjugate: for $3 - \sqrt{5}$, use $3 + \sqrt{5}$. Leave no root in the denominator.

$$\frac{10}{\sqrt{5}} = \frac{10 \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}} = \frac{10\sqrt{5}}{5} = 2\sqrt{5}$$ multiply the top and the bottom by $\sqrt{5}$, then reduce

$$\frac{44}{5 - \sqrt{3}} = \frac{44(5 + \sqrt{3})}{(5 - \sqrt{3})(5 + \sqrt{3})}$$ multiply the top and the bottom by the conjugate, $5 + \sqrt{3}$

$$\frac{44(5 + \sqrt{3})}{25 - 3} = \frac{44(5 + \sqrt{3})}{22} = 10 + 2\sqrt{3}$$ $(a + b)(a - b) = a^2 - b^2$, so the root is gone

Problems 1 and 2 worked out · Version 0A

$$\frac{36}{5 + \sqrt{7}} = \frac{36(5 - \sqrt{7})}{(5 + \sqrt{7})(5 - \sqrt{7})}$$ multiply the top and the bottom by the conjugate, $5 - \sqrt{7}$

$$\frac{36(5 - \sqrt{7})}{25 - 7} = \frac{36(5 - \sqrt{7})}{18} = 10 - 2\sqrt{7}$$ $(a + b)(a - b) = a^2 - b^2$, so the root is gone

$$\frac{3}{\sqrt{5}} = \frac{3 \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}} = \frac{3\sqrt{5}}{5}$$ multiply the top and the bottom by $\sqrt{5}$

Rationalizing the denominator · Version 0A

1) $10 - 2\sqrt{7}$ 2) $\frac{3\sqrt{5}}{5}$ 3) $\frac{12\sqrt{11}}{11}$ 4) $6 + \sqrt{3}$

5) $3 - \sqrt{5}$ 6) $\frac{4\sqrt{7}}{7}$ 7) $4 - \sqrt{6}$ 8) $3 + \sqrt{5}$ 9) $\frac{3\sqrt{5}}{5}$

10) $-4 + 2\sqrt{6}$ 11) $6 - 2\sqrt{5}$ 12) $\frac{5\sqrt{6}}{3}$ 13) $\frac{6\sqrt{5}}{5}$

14) $2\sqrt{2}$ 15) $4 + 2\sqrt{3}$ 16) $\frac{6\sqrt{11}}{11}$ 17) $6 + \sqrt{3}$

18) $\frac{2\sqrt{5}}{5}$ 19) $5 + \sqrt{11}$ 20) $\frac{8\sqrt{3}}{3}$ 21) $\frac{7\sqrt{6}}{6}$

22) $10 + 2\sqrt{7}$ 23) $12 - 3\sqrt{5}$ 24) $\sqrt{3}$ 25) $\frac{8\sqrt{3}}{3}$

26) $\frac{5\sqrt{7}}{7}$ 27) $10 - 2\sqrt{5}$ 28) $-9 - 3\sqrt{10}$

29) $-2 + 2\sqrt{10}$ 30) $5 + \sqrt{6}$ 31) $-2 + 2\sqrt{6}$

32) $\frac{3\sqrt{7}}{7}$ 33) $-2 - \sqrt{7}$ 34) $2\sqrt{6}$