AP Racines carrées.

Ex 1. $A = 3\sqrt{75} = 3\sqrt{25\times 3} = 3\times 5\times\sqrt{3} = \boxed{15\sqrt{3}}$

$B = 4\sqrt{20} = 4\sqrt{4\times 5} = 4\sqrt{4}\times\sqrt{5} = 4\times 2\sqrt{5} = \boxed{8\sqrt{5}}$

Ex 2 $A = 2\sqrt{7} + 3\sqrt{28} = 2\sqrt{7} + 3\sqrt{4\times 7} = 2\sqrt{7} + 3\times 2\sqrt{7}$
$= 2\sqrt{7} + 6\sqrt{7} = \boxed{8\sqrt{7}}$

$B = -3\sqrt{5} - 2\sqrt{45} = -3\sqrt{5} - 2\sqrt{9\times 5} = -3\sqrt{5} - 2\times 3\sqrt{5}$
$= -3\sqrt{5} - 6\sqrt{5} = \boxed{-9\sqrt{5}}$

$C = 3\sqrt{8} - 5\sqrt{18} = 3\sqrt{4\times 2} - 5\sqrt{9\times 2}$
$= 3\times 2\sqrt{2} - 5\times 3\sqrt{2} = 6\sqrt{2} - 15\sqrt{2}$
$= \boxed{-9\sqrt{2}}$

Ex 3 $A = (3\sqrt{3})^2 = 9\times 3 = \boxed{27}$

$B = (-2\sqrt{5})^2 = (-2)^2\times(\sqrt{5})^2 = 4\times 5 = \boxed{20}$

$C = (2\sqrt{3})^3 = 2^3\times(\sqrt{3})^3 = 8\times(\sqrt{3})^2\times\sqrt{3} = 8\times 3\sqrt{3} = \boxed{24\sqrt{3}}$

$D = 2\sqrt{3}\times 3\sqrt{6} = 6\sqrt{18} = 6\sqrt{9\times 2} = 6\times 3\times\sqrt{2} = \boxed{18\sqrt{2}}$

$E = 4\sqrt{2}\times 3\sqrt{6} = 12\sqrt{12} = 12\sqrt{4\times 3} = 12\times 2\sqrt{3} = \boxed{24\sqrt{3}}$

$F = -3\sqrt{2}\times 4\sqrt{3}\times\sqrt{6} = -12\sqrt{6}\times\sqrt{6} = -12\times 6 = \boxed{-72}$

Ex 4 $A = 2\sqrt{7}(-1-\sqrt{7}) = -2\sqrt{7} - 2\sqrt{7}\times\sqrt{7} = \boxed{-2\sqrt{7} - 14}$

$B = 3\sqrt{3}(5\sqrt{3} - \sqrt{2}) = 3\sqrt{3}\times 5\sqrt{3} - 3\sqrt{3}\times\sqrt{2}$
$= 15\times 3 - 3\sqrt{6} = \boxed{45 - 3\sqrt{6}}$

Ex 5
$A = (1-2\sqrt{3})(2\sqrt{3}+4) = 2\sqrt{3} + 4 - 2\sqrt{3}\times 2\sqrt{3} - 2\sqrt{3}\times 4$
$= 2\sqrt{3} + 4 - 12 - 8\sqrt{3}$
$= \boxed{-6\sqrt{3} - 8}$

$B = (5\sqrt{2} - \sqrt{3})(\sqrt{2} - 3\sqrt{3}) = 5\sqrt{2}\times\sqrt{2} - 5\sqrt{2}\times 3\sqrt{3} - \sqrt{6} + 3\times(\sqrt{3})^2$
$= 5\times 2 - 15\sqrt{6} - \sqrt{6} + 3\times 3$
$= 10 - 16\sqrt{6} + 9$
$= \boxed{19 - 16\sqrt{6}}$

Ex 6
$A = (2\sqrt{7} - 3)^2 = (2\sqrt{7})^2 - 2\times 2\sqrt{7}\times 3 + 3^2$
$= 28 - 12\sqrt{7} + 9$
$= \boxed{37 - 12\sqrt{7}}$

$B = (3\sqrt{2} + \sqrt{3})^2 = (3\sqrt{2})^2 + 2\times 3\sqrt{2}\times\sqrt{3} + (\sqrt{3})^2$
$= 9\times 2 + 6\sqrt{6} + 3$
$= \boxed{21 + 6\sqrt{6}}$

$C = \left(\frac{\sqrt{2}}{3} - \sqrt{3}\right)^2 = \left(\frac{\sqrt{2}}{3}\right)^2 - 2\times\frac{\sqrt{2}}{3}\times\sqrt{3} + (\sqrt{3})^2$
$= \frac{2}{9} - \frac{2\sqrt{6}}{3} + 3 = \frac{2}{9} - \frac{2\sqrt{6}}{3} + \frac{27}{9}$
$= \frac{29}{9} - \frac{2\sqrt{6}}{3}$
$= \boxed{\frac{29 - 6\sqrt{6}}{9}}$

$D = \left(\frac{\sqrt{2} - 2\sqrt{5}}{4}\right)^2 = \frac{(\sqrt{2} - 2\sqrt{5})^2}{4^2}$
$= \frac{(\sqrt{2})^2 - 2\times\sqrt{2}\times 2\sqrt{5} + (2\sqrt{5})^2}{16} = \frac{2 - 4\sqrt{10} + 20}{16} = \frac{22 - 4\sqrt{10}}{16}$
$= \boxed{\frac{11 - 2\sqrt{10}}{8}}$

Ex 7 $A = \frac{5}{\sqrt{3}} = \boxed{\frac{5\sqrt{3}}{3}}$

$B = \frac{\sqrt{7}}{5\sqrt{2}} = \frac{\sqrt{7}\times\sqrt{2}}{5(\sqrt{2})^2} = \boxed{\frac{\sqrt{14}}{10}}$

$C = \frac{4}{2+\sqrt{3}} = \frac{4(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})} = \frac{8 - 4\sqrt{3}}{4-3} = \boxed{8 - 4\sqrt{3}}$

$D = \frac{5}{\sqrt{7} - \sqrt{2}} = \frac{5(\sqrt{7}+\sqrt{2})}{(\sqrt{7}-\sqrt{2})(\sqrt{7}+\sqrt{2})} = \frac{5\sqrt{7} + 5\sqrt{2}}{7-2}$
$= \frac{5\sqrt{7} + 5\sqrt{2}}{5}$
$= \boxed{\sqrt{7} + \sqrt{2}}$

Ex 8 Triangle ABC rectangle en A
donc d'après le théorème de Pythagore on a :
$BC^2 = AB^2 + AC^2$
$= \left(\frac{\sqrt{3}}{2}\right)^2 + (\sqrt{3} + 2)^2$
$= \frac{3}{4} + \sqrt{3}^2 + 2\times\sqrt{3}\times 2 + 2^2$
$= \frac{3}{4} + 3 + 4\sqrt{3} + 4$
$= \frac{3}{4} + 7 + 4\sqrt{3} = \boxed{\frac{31}{4} + 4\sqrt{3}}$