

Pg 139-141 # 1a, e, 2a, e, 3-7, 200, 12, 14.

1a)  $2\sqrt{5} + 3\sqrt{5} + 6\sqrt{5} = 11\sqrt{5}$       e)  $8\sqrt{10} - 2\sqrt{10} - 7\sqrt{10} = -13\sqrt{10}$

2a)  $5\sqrt{3} + 2\sqrt{6} + 3\sqrt{3} = 10\sqrt{3}$       e)  $9\sqrt{11} - \sqrt{11} + 6\sqrt{14} - 3\sqrt{14} - 2\sqrt{11} = 6\sqrt{11} + 3\sqrt{14}$

3. a)  $\sqrt{8} + \sqrt{27} = 2\sqrt{2} + 3\sqrt{3} = 5\sqrt{2}$       c)  $\sqrt{18} - \sqrt{8} = 3\sqrt{2} - 2\sqrt{2} = \sqrt{2}$       e)  $\sqrt{75} + \sqrt{48} + \sqrt{27} = 5\sqrt{3} + 4\sqrt{3} + 3\sqrt{3} = 12\sqrt{3}$       g)  $\sqrt{28} - \sqrt{27} + \sqrt{63} + \sqrt{300} = 2\sqrt{7} - 3\sqrt{3} + 3\sqrt{7} + 10\sqrt{3} = 5\sqrt{7} + 7\sqrt{3}$

4 a)  $8\sqrt{7} + 2\sqrt{28} = 8\sqrt{7} + 4\sqrt{7} = 12\sqrt{7}$       c)  $5\sqrt{27} + 4\sqrt{48} = 15\sqrt{3} + 16\sqrt{3} = 31\sqrt{3}$       e)  $\sqrt{5} + 2\sqrt{45} - 3\sqrt{20} = \sqrt{5} + 2(3\sqrt{5}) - 3(2\sqrt{5}) = \sqrt{5} + 6\sqrt{5} - 6\sqrt{5} = \sqrt{5}$

g)  $(\sqrt{5} + \sqrt{6})(\sqrt{5} + 3\sqrt{6}) = 5 + 3\sqrt{30} + \sqrt{30} + 3(6) = 4\sqrt{30} + 23$        $\sqrt{5i} = \sqrt{5}$   
 $(4\sqrt{7} - 3\sqrt{2})(2\sqrt{7} + 5\sqrt{2}) = 8(7) + 20\sqrt{14} - 6\sqrt{14} - 15(2) = 56 + 14\sqrt{14} - 30 = 26 + 14\sqrt{14}$

oops! 5a - 9  
bottom of pg

"PERFECT SQUARE"  
 $(2\sqrt{2} - \sqrt{5})^2 = (2\sqrt{2})^2 - 2(2\sqrt{2})(\sqrt{5}) + (\sqrt{5})^2 = 4(2) - 4\sqrt{10} + 5 = 13 - 4\sqrt{10}$   
 Square the first, square the last, twice the product - Have a Blast!

"DIFFERENCE OF SQUARES"  
 $(\sqrt{6} - \sqrt{2})(\sqrt{6} + \sqrt{2}) = 6 - 2 = 4$   
 Notice  $(\sqrt{6} - \sqrt{2})$  and  $(\sqrt{6} + \sqrt{2})$  are "conjugates"

5a)  $\sqrt{2}(\sqrt{10} + 4) = \sqrt{20} + 4\sqrt{2} = 2\sqrt{5} + 4\sqrt{2}$       c)  $\sqrt{6}(\sqrt{2} + \sqrt{6}) = \sqrt{12} + 6 = 2\sqrt{3} + 6$       e)  $\sqrt{2}(\sqrt{3} + 4) = \sqrt{6} + 4\sqrt{2}$   
 b)  $(\sqrt{5} + \sqrt{6})(\sqrt{5} + 3\sqrt{6}) = 5 + 3\sqrt{30} + \sqrt{30} + 3(6) = 23 + 4\sqrt{30}$

6acegi, 7acegi, 12, 14.

(6a)  $\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$  c)  $\frac{2}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}}$

e)  $\frac{5\sqrt{5} \times \sqrt{3}}{2\sqrt{3} \times \sqrt{3}}$

g)  $\frac{4\sqrt{2}}{\sqrt{8}}$

j)  $\frac{4\sqrt{7}}{2\sqrt{14}}$

k)  $\frac{7\sqrt{11} \times \sqrt{3}}{2\sqrt{3}}$

$= \frac{\sqrt{3}}{3}$

$= \frac{2\sqrt{7}}{7}$

$= \frac{5\sqrt{15}}{2(3)}$

$= \frac{4\sqrt{2}}{8}$

$= \frac{2}{\sqrt{2}}$

$= \frac{7\sqrt{33}}{2(3)}$

$= \frac{5\sqrt{15}}{6}$

$= \frac{4}{\sqrt{4}}$

$= \frac{4}{2}$

$= \frac{7\sqrt{33}}{6}$

$= 2$

7a)  $\frac{1}{\sqrt{2+2}} \times \frac{\sqrt{2-2}}{\sqrt{2-2}}$

c)  $\frac{\sqrt{2}}{\sqrt{6-3}} \times \frac{\sqrt{6+3}}{\sqrt{6+3}}$

e)  $\frac{3}{\sqrt{5-\sqrt{2}}} \times \frac{\sqrt{5+\sqrt{2}}}{\sqrt{5+\sqrt{2}}}$

$= \frac{\sqrt{2-2}}{2-2}$

$= \frac{\sqrt{2+3\sqrt{2}}}{6-9}$

$= \frac{3(\sqrt{5+\sqrt{2}})}{5-2}$

$= \frac{-2}{-2}$

$= \frac{-2\sqrt{3+3\sqrt{2}}}{3}$

$= \sqrt{5+\sqrt{2}}$

$= \frac{2-2}{2}$

g)  $\frac{2\sqrt{6}}{2\sqrt{6}+1} \times \frac{2\sqrt{6}-1}{2\sqrt{6}-1}$

i)  $\frac{\sqrt{2}+\sqrt{5}}{\sqrt{6}-\sqrt{10}} \times \frac{\sqrt{6}+\sqrt{10}}{\sqrt{6}+\sqrt{10}}$

$= \frac{4(6)-1}{24-2\sqrt{6}}$

$= \frac{\sqrt{2}+\sqrt{20}+\sqrt{30}+\sqrt{50}}{6-10}$

$= \frac{2\sqrt{3}+2\sqrt{5}+\sqrt{30}+5\sqrt{2}}{-4}$

12.a)  $A = lw$   
 $= (4\sqrt{2}-\sqrt{3})(2\sqrt{3})$   
 $= 8\sqrt{6}-2\sqrt{3}$   
 $= 8\sqrt{6}-6 \text{ units}^2$

b)  $P = 2l+2w$   
 $= 2(4\sqrt{2}-\sqrt{3})+2(2\sqrt{3})$   
 $= 8\sqrt{2}-2\sqrt{3}+4\sqrt{3}$   
 $= 8\sqrt{2}+2\sqrt{3} \text{ units}$

14.  $V = lwh$

$= \sqrt{5(2)-4(3)} \sqrt{15-\sqrt{2}}$

$= (5\sqrt{2}+2\sqrt{3})(\sqrt{5}-\sqrt{2})(5\sqrt{2}-2\sqrt{3})$   
 $= (5\sqrt{30}-5(2)+2(3)\sqrt{5}-2\sqrt{6})(5\sqrt{2}-2\sqrt{3})$

just notrad diff of squares

$= 38\sqrt{15}-38\sqrt{2} \text{ units}^3$