1)$P(white\ queen\ and\ a1) = P(white\ queen) * P(a1) = \frac{1}{8} * \frac{1}{8} = \frac{1}{64}$

* There is 8 spaces so $P(a1) = \frac{1}{8}$

* There is 1 queen and 8 pieces at all so $P(queen) = \frac{1}{8}$

* And we consider only white pieces so $P(white) = 1$

2) We can't got black queen among our black pieces so $P(black\ queen) = 0$

3)$P(rook\ and\ a1) = P(rook) * P(a1) = \frac{1}{4} * \frac{1}{8} = \frac{1}{32}$

* There is 8 spaces so $P(a1) = \frac{1}{8}$

* There is 2 rooks and 8 pieces at all so $P(rook) = \frac{1}{4}$

4) 1)$P(\ not\ white\ queen\ and\ a1) = 1 - \big(P(white\ queen) * P(a1)\big) = 1 - (\frac{1}{8} * \frac{1}{8}) = \frac{63}{64}$

* There is 8 spaces so $P(a1) = \frac{1}{8}$

* There is 1 queen and 8 pieces at all so $P(queen) = \frac{1}{8}$

* And we consider only white pieces so $P(white) = 1$

5) $P(\ not\ rook\ and\ a1) = 1 - (P(rook) * P(a1)) = 1 - (\frac{1}{4} * \frac{1}{8}) = \frac{31}{32}$

* There is 8 spaces so $P(a1) = \frac{1}{8}$

* There is 2 rooks and 8 pieces at all so $P(rook) = \frac{1}{4}$