Factor Theorem 2

1. If $(x-1)^2$ is a factor of x^3+ax+b, find the values of a and b.
2. If $(x-4)^2$ is a factor of x^3+px+q, find the values of p and q.
3. If $(x-2)^2$ is a factor of x^3+ax^2+b, find the values of a and b.
4. If $(x-3)^2$ is a factor of ax^3+bx^2+27, find the values of a and b.
5. If x^2+px+q is a factor of $x^3+2px^2+2qx+r$, show that;
   i. $q=p^2$
   ii. $r=p^3$
6. If x^2+ax+b is a factor of $x^3+7ax^2+4bx+c$, show that;
   i. $b=2a^2$
   ii. $c=12a^3$
7. If x^2+px+q is a factor of x^3-r, show that;
   i. $p^3=r$
   ii. $q^3=r^2$
8. If $(x-k)^2$ is a factor of $x^3+6ax+2b$, show that;
   i. $a=-\dfrac{k^2}{2}$
   ii. $b=k^3$
9. If x^2+px+2 is a factor of ax^3+cx+d, show that $d^2=8a^2-4ac$