Play with Functions

Let $f(x)=2x+1$, $g(x)=3x$, $h(x)=\sqrt{x+2}$, $k(x)=\dfrac{x}{x+2}$

For question (1),(2) and (3), identify the domain and range for each function.

(1) graph $p(x)=f\circ h(x)$

(2) graph $q(x)=g\circ h(x)$

(3) graph k(x)

(4) solve algebraically the intersection of $p(x)$ and $q(x)$

(5) verify your result of (3) graphically.

(6)Find $m^{-1}(x)$ if $m(x)=h\circ(\dfrac{f}{g})(x)$

(7) Evaluate $m^{-1}(1)\cdot m(1)$

If the degree of polynomial $f(x)$ is 4 and all coefficients of $f(x)$ are rational numbers.

(8)Find $f(x)$, and

(9) Find the remainder of $f(x)\div(x+2)$

if y-intercept of $f(x)$ is (0, 66) and some of zeros of $f(x)$ are $\sqrt{3}-5,-3$ and $-\dfrac{1}{2}$.