1) $x^2+1+\frac{2}{x-3}$

2) quotient? _x^2+1__________ remainder? ___2_________

3) $\boldsymbol{f(3)}$ = _________ 2

4) __f(c)=r(c) if f(x) is divisible by (x-c)_____

5) F(1)=3*1^5-2*1^4+7*1-5=3 so the remainder = 3

$(3x^4+x^3+x^2+x+8+\frac{3}{x-1})$

6) $(-2)^3$+2*$(-2)^2$+4*-2+8=0

($x^2+4+\frac{0}{x+2}$=>r(x)=0)

7) There is none.

8) Is $(x-2)$ a factor of $f(x)=2x^3-5x^2-4x+12$?

2*2^3-5*2^2-4*2+12=0

$(2x^2-x-6+\frac{0}{x-2})$

9) $(2x+3)(x-2)^2$

10) (-2)^3+10*(-2)^2+31*(-2)+30=0

$$x^2+8x+15+\frac{0}{x+2}$$
$$(x+5)(x+3)(x+2)$$

11) $\pm 20,10,5,4,2,1$

$$(x-1)(x^2+9x+20)=(x-1)(x+4)(x+5)$$

12) ±8,4,2,1

$$(x+1)(x^3-2x^2-4x+8)=(x+1)(x-2)(x^2-4)=(x+1)(x-2)^2(x+2)$$

12) F(-1)=1-8-1+2=-6; f(0)=2; sign changes, it must cross the x-axis

13) Show that the equation $x^3+x^2-3=0$ has no rational roots, but that it does have an irrational root between x=1 and x=2.
The possible rational roots are ±3,1. f(3)≠0, f(-3)≠0, f(1)≠0, f(-1)≠0
F(1)=-1; f(2)=9; sign changes, it must cross the x-axis