Classwork Factor and Remainder Theorem

Please work all problems on a separate sheet of paper.

In exercises 1 – 5, use the Remainder Theorem to evaluate $f(c)$.

1. $f(x)=2x^3+6x^2-9x+21$ and $c=-1$
2. $f(x)=x^4-15x^3+5x-7$ and $c=3$
3. $f(x)=2x^3-5x^2-4x+3$ and $c=1/2$
4. $f(x)=6x^4+x^3-7x+11$ and $c=0$
5. $f(x)=x^3-2x^2+5x$ and $c=6$

In exercises 6 – 8 determine if the number c. Is a zero of the polynomial f

6. $f(x)=-6x^3+9x^2-7x+26$ and $c=2$
7. $f(x)=x^4-2x^3+x^2+48$ and $c=-3$
8. $f(x)=8x^5-5x^2+10$ and $c=1/2$

In exercises 9 – 10 determine if

9. $x-4$ is a factor of $f(x)=x^3-2x^2+8x+64$
10. $x+1$ is a factor of $f(x)=x^4-2x^2+x+3$

In exercises 11 – 13 factor $f(x)$ completely (over the integers) given c is a zero of f of multiplicity k.

11. $f(x)=3x^3-8x^2+3x+2$ given that $c=2$ is a zero of f
12. $f(x)=2x^4+21x^3+57x^2-5x-75$ given that $c=-5$ is a zero of multiplicity two
13. $f(x)=4x^4-9x^3+3x^2+5x-3$ given that $c=1$ is a zero of multiplicity three