1. If $f(-6)=0$, then _____ is a factor of $f(x)$.

2. If $3x-2$ is a factor of $f(x)$, then _____ is a zero of $f(x)$.

3. If $f(x)=(5x-2)(2x+1)(3x-1)$, then the zeros of $f(x)$ are: _____

4. If $f(7)=0$, then a factor of $f(x)$ is: _____

5. If $3x-4$ is a factor of $f(x)$, then $f(\_\_\_\_\_)=0$

6. Show in 2 ways that $x+1$ is a factor of $x^3-x^2-5x-3$.

7. Show 2 ways that $x-3$ is a factor of $x^5-243$.

8. Factors of $x^3+2x^2-5x-6$ are $(x-2),(x+3)$ and $(x+1)$. What are the zeros of the polynomial?

9. Given the zeros of $x^3-3x^2-18x+40$ are 2, - 4, and 5. What are the factors of the polynomial? Check by multiplication.

10. Show that $-4$ is a zero of $f(x)=x^3+6x^2+11x+12$.

11. Given that $(x+1)$ is a factor of $f(x)=3x^3-7x^2-18x-8$ find all zeros of $f(x)$.

12. One root of $2x^3+7x^2-33x-18=0$ is -6. Find the complete solution set of this equation.

13. Show that $(x+2)$ is a factor of $x^3+3x^2+4x+4=0$. Use this information to find the solution set of this equation.

14. One zero of $2x^3 - 3x^2 - 23x + 12$ is $\dfrac{1}{2}$. Find the complete **factorization** of this polynomial and find the remaining zeros. **(THE COMPLETE FACTORIZATION OF A POLYNOMIAL WILL INCLUDE FACTORS WITH ONLY INTEGRAL COEFFICIENTS.)**

15. Find the remainder when $x^{124} - 5x^{76} + 2x^{45} - 3x + 5$ is divided by $x + 1$.

16. If $x + 3$ is a factor of $f(x) = x^3 + 4x^2 + x - 6$, find the complete factorization of $f(x)$.

17. One root of $x^3 + 4x^2 - 4x - 1 = 0$ is 1. Find the other roots.