INDENTIFYING POLYNOMIALS

➢ **Identify the leading coefficient, the constant term, and the degree of the polynomial function.**

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

Leading Coefficient: ____
Constant Term: ____
Degree: ____

2) $P(x) = -3x + 3x^4 - 7$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

3) $P(x) = 2 + 3x^2 - 5x^3$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

4) $P(x) = x^2 - 5x^4 - x^6$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

5) $P(x) = 2x^2 - \pi x^6 + \frac{1}{2}$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

6) $P(x) = x + 3$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

7) $P(x) = -4x^5 - 3x^2 + x - \sqrt{7}$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

8) $P(x) = 15$

Leading Coefficient: ____
Constant Term: ____
Degree: ____

➢ **Explain why the following functions are not polynomial functions.**

9) $P(x) = 3x^{1/2} - 8x^2$

10) $P(x) = 3\sqrt{x+1} - 2x^2 - 3x$

11) $P(x) = \frac{3x^2 - 2x + 1}{x}$

12) $P(x) = x^{-1} + 2$

➢ **Evaluate the polynomial with the given value.**

13) $P(x) = 3x^2 - 2x - 8$, evaluate $P(3)$ = ____

14) $f(x) = x^3 - 2x^2 - 10$, evaluate $f(-1)$ = ____

15) $R(x) = -x^3 + 2x^2 - 3x + 4$, evaluate $R(0)$ = ____

16) $L(x) = x^2 + 4x + \frac{1}{2}$, evaluate $L\left(\frac{1}{2}\right)$ = ____

ADD OR SUBTRACT POLYNOMIALS

➢ **Simplify**

17) $\left(5x^2+2x-7\right)+\left(x^2-8x+12\right)$

18) $\left(x^2-3x+8\right)-\left(2x^2-3x+7\right)$

19) $\left(3y^2-7y\right)+\left(2y^2-8y+2\right)$

20) $\left(3a^2-9a\right)-\left(-5a^2+7a-6\right)$

21) Given $P(x)=3x^3-4x^2-x+1$ and $R(x)=2x^3+5x-8$, find $P(x)+R(x)$

22) Given $P(x)=5x^3-3x-7$ and $R(x)=2x^3-3x^2+8$, find $P(x)-R(x)$

23) Given $P(x)=x^{2n}+7x^n-3$ and $R(x)=-x^{2n}+2x^n+8$, find $P(x)+R(x)$

24) Given $P(x)=2x^{2n}-x^n-1$ and $R(x)=5x^{2n}+7x^n+1$, find $P(x)-R(x)$