LISTA 01 :

1)

$m^2 - 16 = 0 \qquad m - 4 \neq 0$

$m^2 = 16 \qquad m \neq 4$

$m = \pm 4$

$\boxed{m = -4}$

2)

$a^2 - 9 = 0 \qquad a + 3 \neq 0$

$a^2 = 9 \qquad a \neq 3$

$a = \pm 3$

$\boxed{a = 3}$

3)

$k^2 - 2 = 0$

$k = \pm\sqrt{2}$

4)

a) $A(-1) = -2(-1)^3 - (-1)^2 + 3(-1) - 7 = -2\cdot(-1) - 1 - 3 - 7 = -9$

b) $B(2) = 2\cdot 2^4 - 2\cdot 2^2 + 5\cdot 2 - 1 = 32 + 10 - 1 = 33$

c) $C(1) = -2\cdot 1^4 - 2\cdot 1^3 - 2\cdot 1^2 - 2\cdot 1 - 2 = -10$

d) $D(-i) = 6(-i)^2 + 2(-i) - 4$

$= 6\cdot(-1) - 2i - 4$

$= -10 - 2i$

5)

$p(x) - x = p(x-1)$

$kx^2 + kx + 1 - x = k(x-1)^2 + k(x-1) + 1$

$kx^2 + (k-1)x + 1 = x^2k - 2kx + \cancel{k} + kx + 1 - \cancel{k}$

$= x^2k + kx + 1$

[illegible] $+ k = k - 1$

$1 = 2k$

$k = 1/2$

6)

$a^2 + 1 = 5$

$a^2 = 1$

$\boxed{a = \pm 1}$

$\boxed{a + b = 7}$

$-10 = -b - 2$

$\boxed{b = 8}$

$2c = 8$

$\boxed{c = 4}$

$a + 8 = 7$

$\boxed{a = -1}$

$a + b + c = -1 + 8 + 4 = 11$

(7) $p(-2)=0$

$(-2)^3+4\cdot(-2)^2+m(-2)-3=0$

$-8+16-2m-3=0$

$5=2m$

$\boxed{m=5/2}$

(8) $2^3+k\cdot 2^2+20\cdot 2-12=0$

$8+4k+40-12=0$

$4k+36=0$

$\boxed{k=-9}$

(9) $p(-1)=-2$

$(-k^2-2)(-1)^3-5\cdot(-1)^2+(-1)-10=-2$

$k^2+2-5-11=-2$

$k^2=12$

$k=\pm\sqrt{12}=\pm 2\sqrt{3}$

(10) $p(1)=0$

$p(2)=0$

$a\cdot 1^3-2\cdot 1^2+b\cdot 1-1=0$

$\boxed{a+b=3}$

$a\cdot 2^3-2\cdot 2^2+b\cdot 2-1=3$

$8a+2b=12$

$4a+b=6$

$$\begin{cases} -a-b=-3 \\ 4a+b=6 \end{cases}$$

$3a=3$

$a=1$

$-1-b=-3$

$\boxed{2=b}$

1 e 2 //

(11) $p(x)=ax^2+bx+c$

$p(0)=7 \Rightarrow \boxed{c=7}$ $\rightarrow$ $p(x)=ax^2+bx+7$

$p(-1)=16 \Rightarrow a(-1)^2+b(-1)+7=16$

$\boxed{a-b=9}$

$p(7)=0 \Rightarrow 49a+7b+7=0 \quad \div 7$

$\boxed{7a+b=-1}$

$$\begin{cases} a-b=9 \\ 7a+b=-1 \end{cases}$$

$\rightarrow 8a=8$

$\boxed{a=1}$

$1-b=9$

$1-9=b$

$\boxed{b=-8}$

$p(x)=x^2-8x+7$

$p(3)=9-24+7=-8$

$p(5)=25-40+7=-8$

$y=2\cdot(-8)-(-8)=8$ //

(12) $p(x) = 2x^3 + ax^2 + bx + 6$

$p(1) = 2 + a + b + 6 = 15$

$\boxed{a+b=7}$

$p(2) = 2 \cdot 8 + a \cdot 4 + b \cdot 2 + 6 = 44$

$4a + 2b = 22$

$2a + b = 11$

$$\begin{cases} -a - b = -7 \\ 2a + b = 11 \end{cases}$$

$\boxed{a=4}$

$4 + b = 7$

$\boxed{b=3}$

$p(x) = 2x^3 + 4x^2 + 3x + 6$

$p(-1) = 2 \cdot (-1) + 4 \cdot 1 + 3 \cdot (-1) + 6$

$= 5$ //

(13) a) $x^2 + 6x + 8$

b) $x^2 - 7x + 10 - x + 2 = x^2 - 8x + 12$.

c) $x^3 - 5x^2 + 18x - 9$

d) $9x^3 + 27x^2 - 8x + 8$

e) $(2x^2 + 6x - 4)(x+1) = 2x^3 + 2x^2 + 6x^2 + 6x - 4x - 4$

$= 2x^3 + 8x^2 + 2x - 4$

f) $(x^3 - 6x^2 + 7x + 4) \cdot (x^2 - 2x - 1) = x^5 - 2x^4 - x^3 - 6x^4 - 12x^3 + 6x^2 + 7x^3 - 14x^2 - 7x$

$+ 4x^2 - 8x - 4$

$= x^5 - 8x^4 + 18x^2 - 15x - 4$ //

(14) a) $A + 2B + C = 5x^2 - 8x + 15 + 2(2x^3 - 6x^2 - 9x + 10) + (-3x + 2)$

$= 4x^3 - 7x^2 - 29x + 37$

b) $-A \cdot C + B = -(-3x+2)(5x^2 - 8x + 15) + 2x^3 - 6x^2 - 9x + 10$

$= -(-15x^3 + 10x^2 + 24x^2 - 16x - 45x + 30) + 2x^3 - 6x^2 - 9x + 10$

$= 15x^3 - 34x^2 + 61x - 30 + 2x^3 - 6x^2 - 9x + 10$

$= 17x^3 - 40x^2 + 52x - 20$

(15) $2(x-1)^3 \cdot p(x) \cdot q(x) \cdot q(x) \cdot q(x) \cdot q(x)$

$3 + n + m + m + m + m$

$\boxed{4m + n + 3}$ (d)