1 *Consider the polynomial*

$$2x^3 + 3x^2 - x + 6.$$

You can think of this polynomial as

$$2x^3 + 3x^2 + (-1)x^1 + 6x^0.$$

That may make the answers below more obvious.

a *How many terms does this expression have?*

The terms are separated by addition and subtraction, so there are 4 terms.

b *List the terms.*

When terms are separated by subtraction, the minus sign is part of the term that comes after it. Therefore, the terms are $2x^3$, $3x^2$, $-x$, and 6.

c *For each term, give its coefficient.*

If there's no number in front of a term, then the missing number is 1. A minus sign in front of a term also belongs with the coefficient. Therefore, the coefficients are 2, 3, -1, and 6.

d **Extra credit:** *For each term, give its degree.*

If there's no exponent on a variable, then the missing exponent is 1. If the variable doesn't appear at all, then the degree on it is 0. Therefore, the degrees are 3, 2, 1, and 0.

2 *Simplify the polynomial expression*

$$(p - p^3 + 2) + (6 - 2p^2 + p^3)$$

and put it in standard form. (Show at least one intermediate step.)

To add these polynomials, I combine the p^3-terms, combine the p^2-terms, combine the p-terms, and combine the constant terms:

$$\begin{aligned}(p - p^3 + 2) + (6 - 2p^2 + p^3) &= 1p + (-1)p^3 + 2 + 6 + (-2)p^2 + 1p^3 \\ &= (-1 + 1)p^3 + (-2)p^2 + 1p + (2 + 6) \\ &= 0p^3 + (-2)p^2 + 1p + 8 \\ &= -2p^2 + p + 8.\end{aligned}$$