Class Exercise 1 Solutions

Solutions (Problem 1 and 2)

- $p(x) = -5 + 3x + 8x^2 - 2x^4$
- Problem 8c (Section 1.1, page 15)

$$p(x) = 6(x+2)^3 + 9(x+2)^7 + 3(x+2)^{15} - (x+2)^{31}$$

Solution:

$$p(x) = -5 + 3x + 8x^2 - 2x^4$$

$$p(x) = -5 + x(3 + x(8 + x^2(-2)))$$

Let $y = x + 2$

$$p(x) = 6y^3 + 9y^7 + 3y^{15} - y^{31}$$

$$p(x) = y^3(6 + y^4(9 + y^8(3 + y^{16}(-1))))$$

Solutions Problem 3 and 4

- Problem 3:

$$\begin{array}{r|rrrrr} & 1 & -4 & 7 & -5 & -2 \\ 2) & & 2 & -4 & 6 & 2 \\ \hline & 1 & -2 & 3 & 1 & 0 \end{array}$$

- Thus, we have $p(2) = 0$, and

$$x^4 - 4x^3 + 7x^2 - 5x - 2 = (x - 2)(x^3 - 2x^2 + 3x + 1)$$

- Problem 4:

	2	0	9	-16	12
-6)		-12	72	-486	3012
	2	-12	81	-502	3024

Hence, $p(-6) = 3024$

Solutions

- Page 16, Exercise 18b (Section 1.1) Calculate *p*'(2)

$$p(x) = 2x^4 - 3x^3 - 5x^2 + 3x + 8 \text{ at } x = 2$$

- Solution

	2	-3	-5	3	8
2)		4	2	-6	-6
	2	1	-3	-3	2
2)		4	10	14	
	2	5	7	11	

$p(2) = 2$ and $p'(2) = 11$