p1028 #3, 5, 12, 13, 15, 23, 31-34, 39, 41-44

11.2B

3.) $4x^3-3x^2+x+1 \div x-4$

$4 \mid 4 \quad -3 \quad 1 \quad 1$

$\quad\quad 16 \quad 52 \quad 212$

$4 \quad 13 \quad 53 \mid 213$

$$4x^2+13x+53+\frac{213}{x-4}$$

5.) $x^2+2 \overline{)\, 4x^3-3x^2+x+1}$

$4x-3$

$-4x^3 \quad +8x$

$-3x^2-7x+1$

$-3x^2 \quad -6$

$-7x+7$

$$4x-3+\frac{-7x+7}{x^2+2}$$

12.) $3x-1 \overline{)\, 3x^3-x^2+x-2}$

x^2

$3x^3-x^2$

$x-2$

$$x^2+\frac{x-2}{3x-1}$$

13.) $x^4-1 \div x-1$

$1 \mid 1 \quad 0 \quad 0 \quad 0 \quad -1$

$\quad\quad 1 \quad 1 \quad 1 \quad 1$

$1 \quad 1 \quad 1 \quad 1 \mid 0$

$$x^3+x^2+x+1$$

or

$x-1 \overline{)\, x^4-1}$

x^3+x^2+x+1

$-x^4-x^3$

$-x^3-1$

$-x^3-x^2$

$-x^2-1$

$-x^2-x$

$-x-1$

$-x-1$

0

15.) $x^2-1 \overline{)\, x^4-1}$

x^2+1

x^4-x^2

x^2-1

x^2-1

0

$$x^2+1$$

23.) $x^3-a^3 \div x-a$

$a \mid 1 \quad 0 \quad 0 \quad -a^3$

$\quad\quad a \quad a^2 \quad a^3$

$1 \quad a \quad a^2 \mid 0$

$$x^2+ax+a^2$$

- or -

$x-a \overline{)\, x^3-a^3}$

x^2+ax+a^2

$-x^2 \quad -ax^2$

ax^2-a^3

$-ax^2 \quad -a^2x$

a^2x-a^3

a^2x-a^3

0

31.) $x^5-4x^3+x \div x+3$

$-3 \mid 1 \quad 0 \quad -4 \quad 0 \quad 1 \quad 0$

$\quad\quad -3 \quad 9 \quad -15 \quad 45 \quad -138$

$1 \quad -3 \quad 5 \quad -15 \quad 46 \mid -138$

$$x^4-3x^3+5x^2-15x+46+\frac{-138}{x+3}$$

32.) $x^4+x^2+2 \div x-2$

$2 \mid 1 \quad 0 \quad 1 \quad 0 \quad 2$

$\quad\quad 2 \quad 4 \quad 10 \quad 20$

$1 \quad 2 \quad 5 \quad 10 \mid 22$

$$x^3+2x^2+5x+10+\frac{22}{x-2}$$

33) $4x^6 - 3x^4 + x^2 + 5 \div x - 1$

1	4	0	-3	0	1	0	5
		4	4	1	1	2	2
	4	4	1	1	2	2	7

$4x^5 + 4x^4 + x^3 + x^2 + 2x + 2 + \frac{7}{x-1}$

34) $x^5 + 5x^3 - 10 \div x + 1$

-1	1	0	5	0	0	-10
		-1	1	-6	6	-6
	1	-1	6	-6	6	-16

$x^4 - x^3 + 6x^2 - 6x + 6 + \frac{-16}{x+1}$

39) $4x^3 - 3x^2 - 8x + 4 \div x - 2$

2	4	-3	-8	4
		8	10	4
	4	5	2	8

$4x^2 + 5x + 2 + \frac{8}{x-2}$

41) $3x^4 - 6x^3 - 5x + 10 \div x - 2$

2	3	-6	0	-5	10
		6	0	0	-10
	3	0	0	-5	0

$3x^3 - 5$ — YES, IT IS A FACTOR

42) $4x^4 - 15x^2 - 4 \div x - 2$

2	4	0	-15	0	-4
		8	16	2	4
	4	8	1	2	0

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

YES, IT IS A FACTOR

43) $3x^6 + 82x^3 + 27 \div x + 3$

-3	3	0	0	82	0	0	27
		-9	27	-81	-3	9	-27
	3	-9	27	1	-3	9	0

$3x^5 - 9x^4 + 27x^3 + x^2 - 3x + 9$

YES, IT IS A FACTOR

44) $2x^6 - 18x^4 + x^2 - 16 \div x + 4$

-4	2	0	-18	0	1	0	-16
		-8	32	-56	224	900	-3600
	2	-8	14	-56	225	900	-3616

$2x^5 - 8x^4 + 14x^3 - 56x^2 + 225x + 900 + \frac{-3616}{x+4}$

NO, IT IS NOT A FACTOR