Questions From Homework

① e) $5x^2+13x+6$ $10\times 3=30$, $10+3=13$

$(x+10)(x+3)$

$(x+2)(5x+3)$

① g) t^3+2t^2-3t

$t(t^2+2t-3)$ $-1\times 3=-3$, $-1+3=2$

$t(t-1)(t+3)$

② f) x^6+8 $a^3+b^3=(a+b)(a^2-ab+b^2)$

$(x^2+2)(x^4-2x^2+4)$

② g) x^4-16

$(x^2+4)(x^2-4)$

$(x^2+4)(x+2)(x-2)$

③ b) x^3+0x^2-7x+6 $x=1$

$(1)^3+0(1)^2-7(1)+6$ $(x-1)$ is a factor

$1+0-7+6$

0

$$\begin{array}{r|l} x-1 \;\overline{)\; x^3+0x^2-7x+6} & (x-1)(x^2+x-6) \\ -(x^3-x^2) & (x-1)(x+3)(x-2) \\ \hline x^2-7x+6 & \\ -(x^2-x) & \\ \hline -6x+6 & \\ -(-6x+6) & \\ \hline 0 & \end{array}$$

Synthetic Substitution

Factor using synthetic substitution $x^3 - 7x^2 - 4x + 28$

Find a value of x that makes it equal 0

$(2)^3 - 7(2)^2 - 4(2) + 28$

$8 - 28 - 8 + 28$

0

(x-value) **(Coefficients of the polynomial)**

2 | 1 -7 -4 28

2 -10 -28

1 -5 -14

Bring down the first coefficient

Multiply the first coefficient by the *x-value* and place under the second coefficient. ADD.

Repeat the steps. The coefficients of the other factor are in the bottom row.

$(x-2)(x^2-5x-14)$

$(x-2)(x-7)(x+2)$

$x^3 + 5x^2 - 2x - 24$ **Find a value of x that makes it equal 0**

$(2)^3 + 5(2)^2 - 2(2) - 24$

$8 + 20 - 4 - 24$

0

(x-value) **(Coefficients of the polynomial)**

2

1	5	-2	-24
	2	14	24
1	7	12	

$(x-2)(x^2+7x+12)$

$(x-2)(x+4)(x+3)$

Homework

Omit 31 cf 33

(29) a) $x^3 - 4x^2 + x + 6 = 0$

$(-1)^3 - 4(-1)^2 + (-1) + 6 = 0$

$-1 - 4 - 1 + 6 = 0$

$0 = 0$

$x = -1$

(32) Use synthetic sub.

a) $(a^3 - 4a^2 + a + 6) \div (a - 2)$

2 | 1 -4 1 6

2 -4 -6

1 -2 -3