• A factor of a polynomial results in a remainder of 0

ex1

	x	-10
x	x^2	-10x
2	2x	-20

remainder of 0 → $x^2 - 8x - 20$

$k = 2$

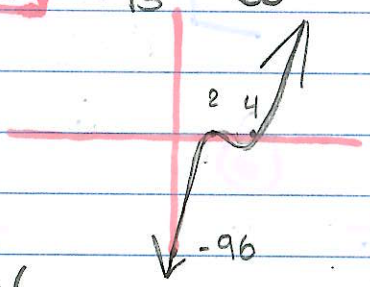
ex4 $x^3 + 0x^2 - kx - 6$

	x^2	4x	9
x	x^3	$4x^2$	9x
-4	$-4x^2$	-16x	-36

remainder is -30

$k = 7$

ex16 $P(x) = k(x-2)^2(x-4)$ (x=2, x=4)



$P(0) = -96$

$\frac{-96 = k(0-2)^2(0-4)}{(0-2)^2(0-4)} \rightarrow \frac{-96}{16} = k \quad k = 6$

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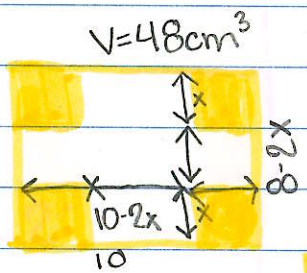
- Ex: 6:



- L = 10 - 2x
- W = 8 - 2x
- h = x
- V = L·w·h

$48 = (10-2x)(8-2x)x$

1. Expand
2. General Form = 0
3. Factor the polynomial

1. 8 -2x → $V = (10-2x)(8-2x)x$

10	80	-20x
-2x	-16x	$4x^2$

$48 = (80 - 36x + 4x^2)x$

$48 = 80x - 36x^2 + 4x^3$

2. $0 = 4x^3 - 36x^2 + 8x - 48$

3. $P(1) = 4(1)^3 - 36(1)^2 + 8(1) - 48 \rightarrow (x-1)$

$= 4(x^2 - 8x + 12)$

	$4x^2$	-32x	48
x	$4x^3$	$-32x^2$	48x
-1	$-4x^2$	32x	-48

	x	-6
x	x^2	-6x
-2	-2x	12

$= 0 = (x-1)(x-2)(x-6)4$

$x = 1 \quad x = 2 \quad x = 6$

Hilroy