The Factor Theorem II (3.3) p133 day 5

Enneagram 5

Perceptive thinkers
Curious and intellectual

Core longing: to be competent
Core fear: being incapable/useless
Deadly sin: avarice (stinginess)

Can be happier observing than participating
Drained by prolonged involvement with others

Withholding personal information
Need to be careful with energy
Can get lost in Wikipedia

Podcast interview

c) $h^3 - 27h + 10$ p133 day 5

hw: p133#5c, 6c, 11

$f(1) = 1 - 27 + 10$

$f(5) = 0$

$h-5 \overline{)\ h^2+5h-2}$

$(h-5)(h^2+5h-2)$

c) $P(v) = v^3 + v^2 - 16v - 16$

11. The volume of water in a rectangular fish tank can be modelled by the polynomial $V(x) = x^3 + 14x^2 + 63x + 90$. If the depth of the tank is given by the polynomial $x + 6$, what polynomials represent the possible length and width of the fish tank?

Quiz tomorrow

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maybe we could try a shorter method than long-dividing

ex1: Divide by synthetic division.

$2x^3 + 3x^2 - 4x + 15 \div (x+3)$

3 | 2 3 -4 15
6 -9 15
2 -3 5 0

$2x^2 - 3x + 5$

$x^3 - 3x^2 - x + 3 \div (x-1)$

1 | 1 -3 -1 3
-1 2 3
1 -2 -3 0

$x^2 - 2x - 3$

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ex2: Divide by synthetic division.

$x^3 - 3x^2 - 4x + 12 \div (x-2)$

-2 | 1 -3 -4 12
-2 2 12
1 -1 -6 0

$x^2 - x - 6$

$x^3 - 3x^2 - x + 3 \div (x-3)$

-3 | 1 -3 -1 3
-3 0 3
1 0 -1 0

$x^2 - 1$

6a

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ex3: The volume of a shipping container can be modeled by

$V(x) = x^3 + 7x^2 - 28x + 20$

Find expressions for the 3 dimensions of the container.

$V(1) = 1 + 7 - 28 + 20 = 0$

$\therefore (x-1)$

-1 | 1 7 -28 20
-1 -8 20
1 8 -20 0

$V(x) = (x-1)(x^2+8x-20)$

$V(x) = (x-1)(x+10)(x-2)$

$\therefore$ dimensions are $x-1, x+10, x-2$

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What if we want to adjust a function to make it go in evenly?

ex4: Find the value of k that makes (x - 2) a factor of

$x^3 - 3x^2 - 4x + k$

-2 | 1 -3 -4 k
-2 2 12
1 -1 -6 0

$k - 12 = 0$

$k = 12$

7ac

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HW: p133#6b, 12, 13

Quiz tomorrow