The Remainder Theorem (3.2) p124 day 3

Enneagram 3

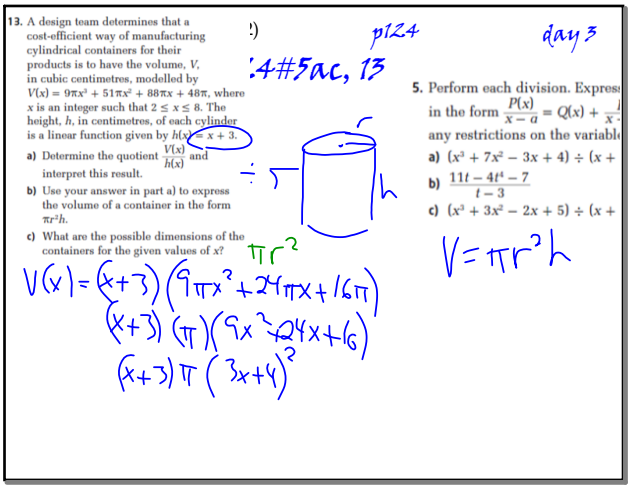
Driven, loves to excel, success
Adaptable performers

Core longing: feel valuable
Core fear: being exposed/worthless
Deadly sin: deceit

Like attention, affirmation, being admired
Can deny their feelings

dad at garage

Can read a room very well
Competitive
Champion multi-taskers



The Remainder Theorem (3.2) p124 day 3

ex1: Given $f(x) = x^3 - 10x + 6$

a) evaluate $f(x) \div (x+4)$

$(x+4)(x-2) = 0$

$x = -4 \quad x = 2$

b) evaluate $f(-4)$

$f(-4) = (-4)^3 - 10(-4) + 6$

$= -64 + 40 + 6$

$= -18$

$x^2 - 4x + 6$

$x+4 \overline{)\, x^3 + 0x^2 - 10x + 6}$

$-x^3 + 4x^2$

$-4x^2 - 10x$

$-4x^2 + 16x$

$-6x + 6$

$-6x + 24$

-18

The Remainder Theorem (3.2) p124 day 3

ex2: recall from yesterday:

$f(x) \quad x^2 + 7x + 17 \div x + 3$

was x+4 remainder 5

$5x^3 - 13x^2 + 10x - 9 \div (x-2)$

was $5x^2$ - 3x+4 remainder -1

Evaluate:f(-3)

$f(-3) = (-3)^2 + 7(-3) + 17$

$= 9 - 21 + 17$

$= 5$

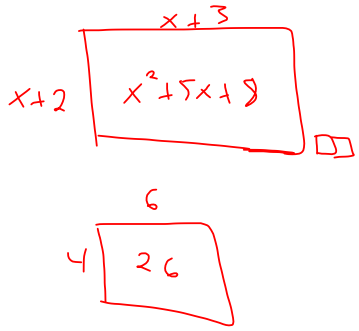
Evaluate f(2)

$f(2) = 5(2)^3 - 13(2)^2 + 10(2) - 9$

$= 40 - 52 + 20 - 9$

$= -1$

What do we notice?



The Remainder Theorem (3.2) p124 day 3

The Remainder Theorem:

When $f(x)$ is divided by $(x-a)$ the remainder is equal to $f(a)$

ex3: What is the remainder when the function is divided?

a) $f(x) = x^3 + 7x^2 - 3x + 4$ by $(x-2)$

$f(2) = 2^3 + 7(2)^2 - 3(2) + 4$

$= 8 + 28 - 6 + 4$

$= 34$

b) $g(x) = x^3 + 3x^2 - 2x + 5$ by $(x+1)$

$g(-1) = (-1)^3 + 3(-1)^2 - 2(-1) + 5$

$= 9$

c) $h(x) = 2x^3 + 3x^2 - 4x + 15$ by $(x+3)$!

$h(-3) = 2(-3)^3 + 3(-3)^2 - 4(-3) + 15$

$= 0$

base

The Remainder Theorem (3.2) p124 day 3

ex4: Solve

a) $3x^2+5x-2=0$ m-6 a 5

$3x^2+6x-x-2=0$ 6 -1

$3x(x+2)-1(x+2)=0$

$(x+2)(3x-1)=0$

$x=-2$ $x=\frac{1}{3}$

b) $2x^2+3x-1=0$ m-2 a 3

$x=\frac{-3\pm\sqrt{9-4(2)(-1)}}{2(2)}$

$=\frac{-3\pm\sqrt{17}}{4}$

$x=0.28$ $x=-1.78$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

The Remainder Theorem (3.2) p124 day 3

HW: p124#7ac, 8ab, 11