6.6: Remainder + Factor Theorems (pg 378)

Ex#1: $f(x) = 3x^4 - 2x^3 + 5x + 2$ find $f(4)$

$3(4)^4 - 2(4)^3 - 6(4) + 2 = 662$

4 | 3 −2 0 5 2

↓ 12 40 100 600

3 10 40 165 662

Ex#2: $0.02x^4 - 0.52x^3 + 4.03x^2 + .09x + 77.54$

1993 − 2013 = 20 years

20 | .02 −.52 4.03 .09 77.54

↓ .4 −2.4 32.16 653.8

.02 −.12 1.63 32.69 731.34 thousands

731,340 students

2A: $A(x) = 2.4x^3 - 22.37x^2 + 53.81x + 548.24$

12 | 2.4 −22.37 53.81 548.24

↓

2.4

2223.56 thousands

2223560 students.

Ex#3: $x^3 - 7x^2 + 7x + 15$ $x - 5 = 0$, $x = 5$.

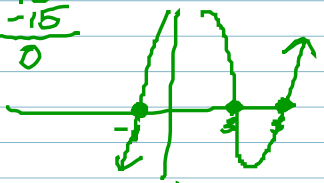
5 | 1 −7 7 15

↓ 5 −10 −15

1 −2 −3 0

$(x-5)(x^2 - 2x - 3)$

$(x-5)(x-3)(x+1)$



3A: $x^3 - 7x^2 + 4x + 12$ $(x-2)$

2 | 1 −7 4 12

↓ 2 −10 −12

1 −5 −6 0

$(x-2)(x^2 - 5x - 6)$ → $(x-2)(x-6)(x+1)$

6.6: Remainder & Factor Theorems (pg 378)

Ex #1: $f(x) = 3x^4 - 2x^3 + 5x + 2$ find $f(4)$

$3(4)^4 - 2(4)^3 - 5(4) + 2 = 662$

4 | 3 −2 0 5 2

↓ 12 40 160 660

3 10 40 165 **662**

Ex #2: $0.02x^4 - 0.52x^3 + 4.03x^2 + .09x + 77.54$

1993 − 2013 = 20 years

20 | .02 −.52 4.03 .09 77.54

↓ .4 −2.4 32.16 653.8

.02 −.12 1.63 32.169 731.34 thousands

2A: $C(x) = 2.4x^3 - 22.37x^2 + 53.81x + 548$ (in thousands)

12 | 2.4 −22.37 53.81 548.24

↓

2.4 2223.56 thousands

2223560 students.

By 731,340 students

Ex #3: $x^3 - 7x^2 + 7x + 15$ $x - 5 = 0$

$x = 5$

5 | 1 −7 7 15

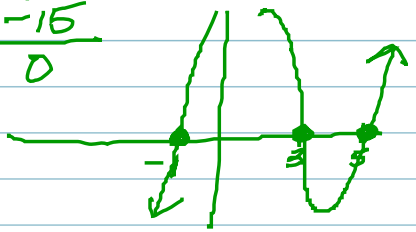
↓ 5 −10 −15

1 −2 −3 0

$(x-5)(x^2 - 2x - 3)$

xx $-3, 1$

$(x-5)(x-3)(x+1)$



3A: $x^3 - 7x^2 + 4x + 12$ $(x-2)$

2 | 1 −7 4 12

↓ −10 −12

1 −5 −6 0

$(x-2)(x^2 - 5x - 6)$

xx $-6, 1$ → $(x-2)(x-6)(x+1)$