Alg2T Day 4 WU

If $a = 10$, then which of the following represents 8,003 ?

F. $8a + 3$
G. $80a + 3$
H. $8a^2 + 3$
J. $8a^3 + 3$
K. $8a^4 + 3$

What is the value of $x^2 + x^0$ when $x = 4$?

F. 16
G. 17
H. 64
J. 65
K. 513

RALLY COACH

- 1 paper and pencil per pair.
- Shoulder partners

- *Partner A solves the first problem*
- *Partner B watches and listens, checks, coaches if necessary, and praises*
- *Partner B solves the next problem*
- *Partner A watches and listens, checks, coaches if necessary, and praises*
- *Continue until all questions are completed or time is up.*

Algebra 2 Trig Daily Learning Target Quiz
Unit 3 - Day 4

1.) Factor: $2x^4 - 16x$	2.) Factor: $27x^3 + 45x^2 - 3x - 5$
3.) Factor: $16x^4 - 81$	4.) Solve: $4x^5 - 40x^3 + 36x = 0$

Alg2T Day 5 Extra Credit

Which of the following is NOT a solution of $(x-3)(x-1)(x+3)(x+7)=0$?

F. -7
G. -3
H. 1
J. 3
K. 7

Warm Up:

Use Synthetic Division & Factor Completely

1) $x^3-6x^2+5x+12$ divided by $x-4$

$x-4=0$

$x=4$

4	1	-6	5	12
		4	-8	-12
multiply	1	-2	-3	0

$1x^2-2x-3$

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

$x=3 \quad x=-1 \quad x=4$

homework questions?

61) V=250
h and w each 5 less than the length
what are the dimensions?

52) 5
58) 3m
62) 4ft by 2ft by 12ft
14) x+3 +18/x-3
16) x^2-3x+5 +-9/x+3
24) (x+3)(x+5)(x+10)
26) (x-6)(x-5)(x+2)
28) (x-5)(3x+1)(x+4)

DLT Factoring

ACT Problem

The quadratic equation $12x^2=28x$ can be solved by factoring. Which of the following states the complete solution?

A.) x=0 or x=1

B.) x=0 or x=7/3

C.) x=1 or x=1

D.) x=1 or x=7/3

E.) x=7/3 or x=7/3

CH 5 Day 3
Polynomial Functions
(5.5)Long and Synthetic Division

I. Direct vs. Synthetic Substitution

Example

1.) $-3x^3 + x^2 - 12x - 5; x = 2$

$x - 2$

Direct

$-3(2)^3 + 2^2 - 12(2) - 5$

-49

Synthetic

$$\begin{array}{r|rrrr} 2 & -3 & 1 & -12 & -5 \\ & \downarrow & -6 & -10 & -44 \\ \hline & -3 & -5 & -22 & -49 \end{array}$$

$-3x^2 - 5x - 22 - \frac{49}{x-2}$

II. Synthetic Division

Review:

1.) $(x^3+2x^2-57x+54)\div(x+9)=$

II. Synthetic Division

Factor the polynomial given that f(k)=0.

Review:

2.) $f(x) = x^3 - 5x^2 - 2x + 24,\ k = -2$

II. Synthetic Division

Factor the polynomial given that f(k)=0.

Review:

3.) $f(x) = x^3 - 3x^2 - 16x - 12, \; k = 6$

6 | 1 -3 -16 -12

↓ 6 18 12

$1x^2 + 3x + 2$ | 0

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

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

II. Synthetic Division

Example

Given polynomial function f and a zero of f, find the other zeros.

4.) $f(x) = 2x^3 + 3x^2 - 39x - 20,\ 4$

II. Synthetic Division

TOYO:

Given polynomial function f and a zero of f, find the other zeros.

5.) $f(x)=15x^3-119x^2-10x+16,$ 8

8 | 15 −119 −10 16

120 8 −16

15 1 −2 | 0

$15x^2+1x-2$

$(15x^2-5x)(+6x-2)$

$5x(3x-1)+2(3x-1)$

$(5x+2)(3x-1)=0$

$5x+2=0 \quad 3x-1=0$

$x=8 \quad x=-\frac{2}{5} \quad x=\frac{1}{3}$

-30

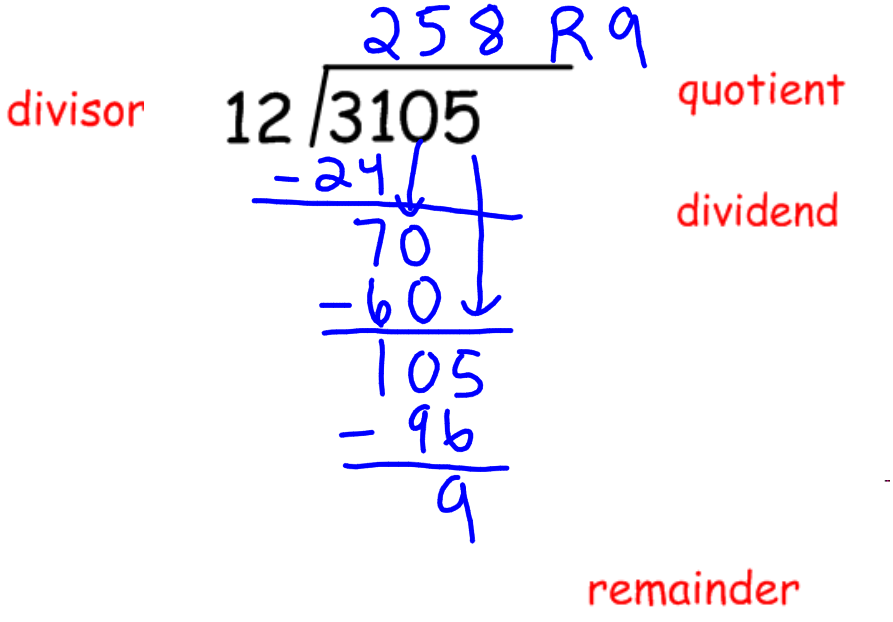
$6 \quad -5$

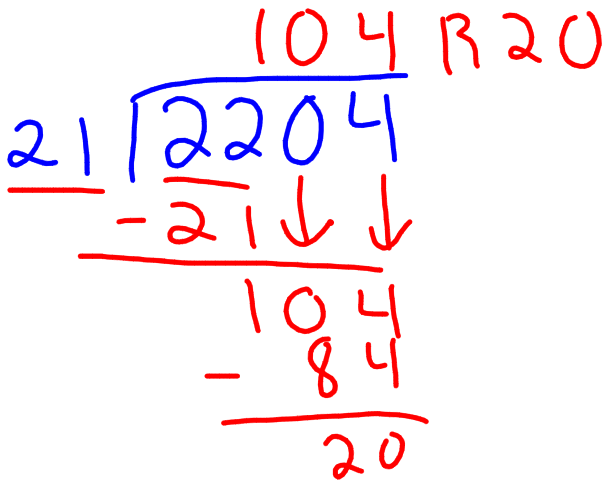
1

Long Division

Review:

Divide 3105 by 12 using long division




104 R20
21 | 2204
-21↓↓
104
-84
20

III. Polynomial Long Division

1.) $(x^4+5x^3-x^2-4x-1)\div(x-1)=$

x^3+6x^2+5x+1

$x-1 \;\big|\; x^4+5x^3-x^2-4x-1$

$-x^4+x^3$

$6x^3-x^2$

$-6x^3+6x^2$

$5x^2-4x$

$-5x^2+5x$

$1x-1$

$x^1 \cdot \bigcirc = 5x^2$

III. Polynomial Long Division

Example

2.) $(2x^4+7)\div(x^2-1)=$

$2x^2+2$

$x^2-1 \;\big|\; 2x^4+0x^3+0x^2+0x+7$

$-2x^4 \qquad +2x^2$

$2x^2+0x+7$

$-2x^2 \qquad +2$

9 remainder

$2x^2+2+\frac{9}{x^2-1}$

III. Polynomial Long Division

Example

3.) Divide $f(x) = x^3 + 3x^2 - 7$ by $x^2 - x - 2$

$$x^2 - x - 2 \;\overline{)\; x^3 + 3x^2 + 0x - 7}$$

$x + 4$

$-x^3 + x^2 + 2x$ ↓

$4x^2 + 2x - 7$

$-4x^2 + 4x + 8$

$6x + 1$

$$x + 4 + \frac{6x+1}{x^2 - x - 2}$$

IV. Application

BUSINESS The profit P (in millions of dollars) for a shoe manufacturer can be modeled by $P = -21x^3 + 46x$ where x is the number of shoes produced (in millions). The company now produces 1 million shoes and makes a profit of \$25,000,000, but would like to cut back production. What lesser number of shoes could the company produce and still make the same profit?

$25 = -21x^3 + 46x$

$0 = -21x^3 + 46x - 25$

1	-21	0	46	-25
	↓	-21	-21	25
	-21	-21	25	0

$-21x^2 - 21x + 25 = 0$

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

$x = \frac{21 \pm \sqrt{(-21)^2 - 4(-21)(25)}}{2(-21)}$

$x = 1.7, -.7$

Example 3- Maximize a polynomial model

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Calculator work

And the homework:
(5.5) Unit Plan Day 3