September 30, 2015

5.1 Functions

#1 – #45 m3

#6) $\{(9,0), (3,6), (8,0), (3,8)\}$

D: $\{9, 3, 8\}$

R: $\{0, 6, 8\}$

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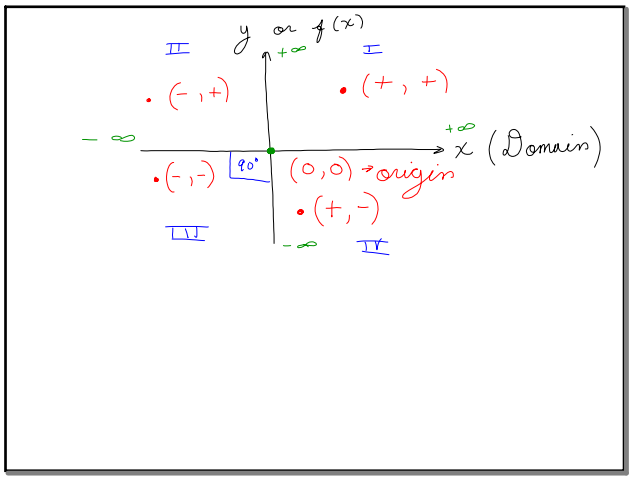

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#7) $\{(2,4), (-2,2), (-2,-2), (2,-2)\}$

D: $\{2, -2\}$

R: $\{4, 2, -2\}$

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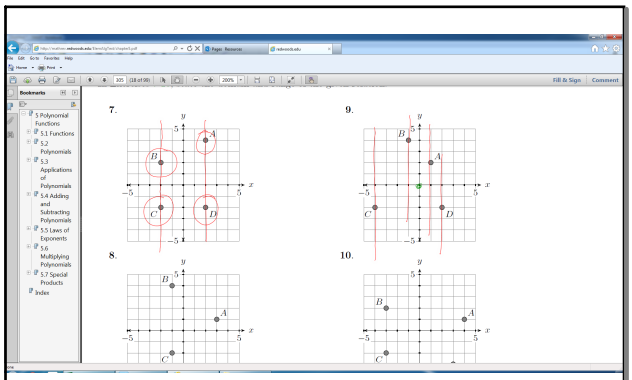

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#24) $f(x) = |8x - 3|$ ← Rule

$f(5) = |8(5) - 3|$ ← 5: input

$= |40 - 3|$

$= |37|$

$= 37$ ← output

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

$g(-6) = -(-6)^2 - 3(-6) + 5$

$= -[(-6)(-6)] + 18 + 5$

$= (-1) \cdot 36 + 18 + 5$

$= -36 + 18 + 5$

$= -18 + 5$

$= -13$

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$(-7)^2 = (-7)\cdot(-7) = 49$

Base

$-7^2 = (-1)\cdot 7^2$ ← base

$= (-1)\cdot 7\cdot 7$

$= (-7)\cdot(7)$

$= -49$

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$f(x) = \dfrac{x+1}{|2x-4|}$

$f(-8) = \dfrac{(-8)+1}{|2(-8)-4|} = \dfrac{-7}{|-16-4|}$

$= \dfrac{-7}{|-20|}$

$= \dfrac{-7}{20}$

$= -\dfrac{7}{20}$

FACT

$-\dfrac{a}{b} = \dfrac{-a}{b} = \dfrac{a}{-b}$

$\dfrac{(-1)}{1} \cdot \dfrac{a}{b} = \dfrac{-a}{b}$

-1

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y or $f(x)$

$y = 4x - 5$ $\quad f(x) = 4x - 5$ (Rule; input)

x	y
0	-5
$\frac{5}{4}$	0
-55	-225
$\frac{13}{4}$	10

x	$f(x)$
0	-5

$0 = 4x - 5$

$\frac{5}{4} = \frac{4x}{4}$

$\frac{5}{4} = x$

$(0,-5)$, $\left(\frac{5}{4},0\right)$, $(-55,-225)$, $\left(\frac{13}{4},10\right)$

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5.2 Polynomials

① Term: is a number or the product of a number and one or more variables, and the variables can be raised to powers.

5, $5a$, $-2x^8y^{43}z^2$

$6x^2$ — Coefficient: 6; Variable: x; Exponent: 2

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Degree of a Term

is the sum of all exponents of the variables of the term.

e.g. $6x^2 \rightarrow$ Degree: 2

$-2a^1b^3c^5$

Degree: $1+3+5 = 9$

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Polynomials

① Monomial (Term) "one": 5, $5x$, $5x^2$

② Binomial "two": connecting two terms w/ a sum or difference

$2x^2 + 3x$

$x + 3$

$x - 5$

$2x + 6$

$8x - 6$

③ Trinomial "three"

$2x^2 - 3x + 4$

$-a^2 - a + 1$

$4x - 3y + \square q$

④ Polynomial "many" terms

5, $2x^3 - 9$, $4x^2 + 2x - 9$, $14xy - 2x^2y + 3xy^2 + 2$

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Degree of a Polynomial

$5x^{5} + 2x^{4} - 3x^{3} + 2x + 9$

Degree: 5

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two solutions

$x^{2} + 4x + 2$

Degree: 2

$x^{3} - 27$

$(x-3)(x^{2} + 3x + 9)$

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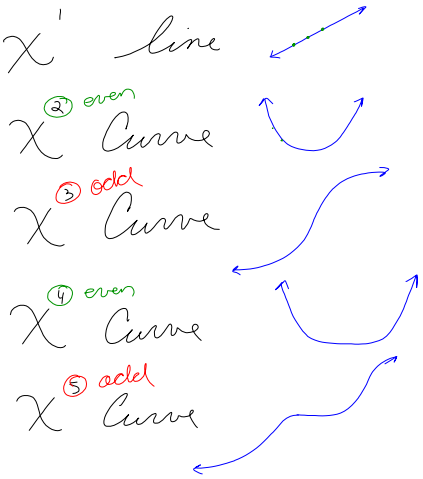
x^{1} line

x^{2} even Curve

x^{3} odd Curve

x^{4} even Curve

x^{5} odd Curve



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$-2x + 6x^{2} - 3x^{4}$

$-3x^{4} + 6x^{2} - 2x$

Degree: 4

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For Monday

* Read 5.2 & do #1 – #60 m3
* Quiz on 5.1 & 5.2

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