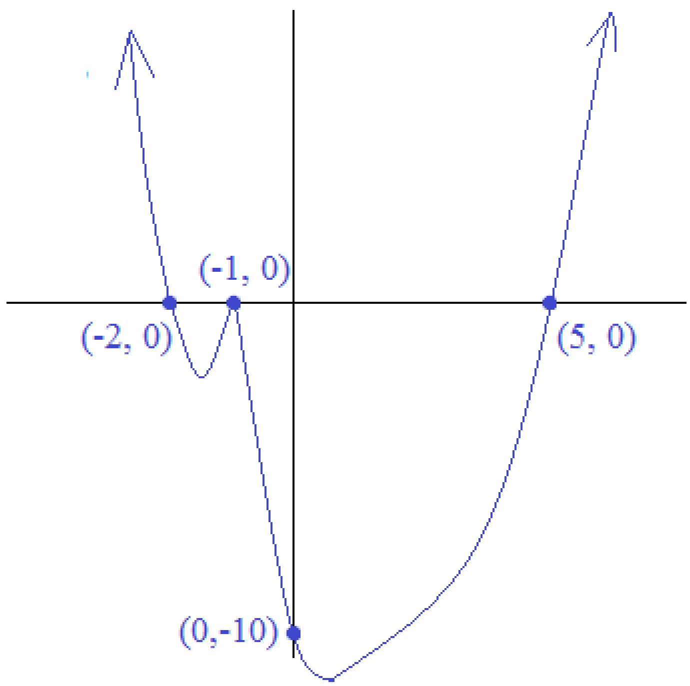
Algebra II Semester Finals Review

Practice Test and Solutions

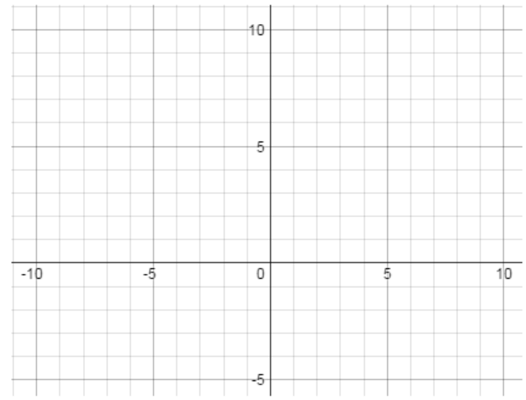


Topics include polynomials, exponents, matrices, imaginary numbers, piecewise functions, and more.

Algebra II Review Questions/Topics

I. Linear

line A: $3x + 5y = 15$ (standard form)



a) What is the x-intercept? y-intercept?

b) Graph line A

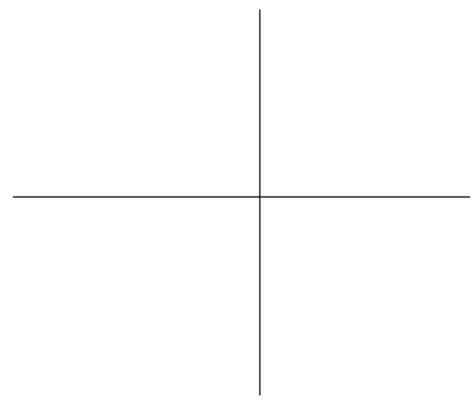
c) Line B is parallel to A and goes through $(-4, 10)$.
What is the equation of Line B

in point slope form:

in slope intercept form:

II. Quadratic

parabola A: $x^2 + 8x - 20$ (standard form)



a) Write the equation of A in *vertex form*

b) Write the equation of A in *factored (intercept) form*

c) Graph the curve. Label the axis of symmetry, vertex, any x-intercepts, and y-intercept

Miscellaneous:

1) What is the vertex of $3x^2 + 6x - 90$

2) Describe the solutions of the following: real, imaginary, rational, irrational.....

$x^2 + 5x + 12$

$3x^2 + 12x + 9$

$x^2 - 14x + 49$

$-2(x^2 + 4) - 11$

$-x^2 + 4x + 15$

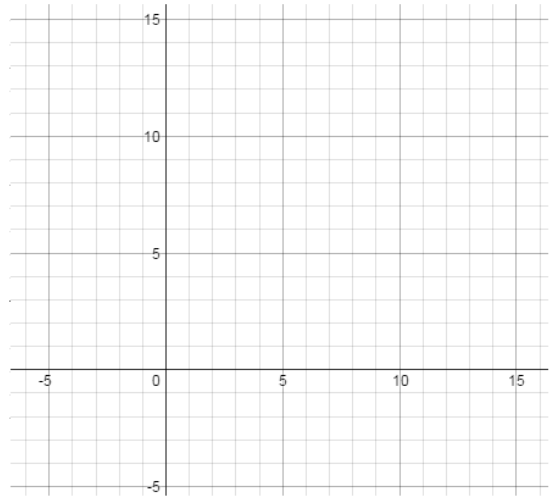
$(x + 4)(x - 2)$

Algebra II Review Questions/Topics

III. Absolute Values

$y = -3|x - 5| + 12$

a) Identify the vertex, axis of symmetry, y-intercept, and any x-intercepts



b) Graph the equation

c) What is the domain? Range?

IV: Polynomials

Describe the end behavior of the following:

$f(x) = (x + 3)^2(x - 13)$

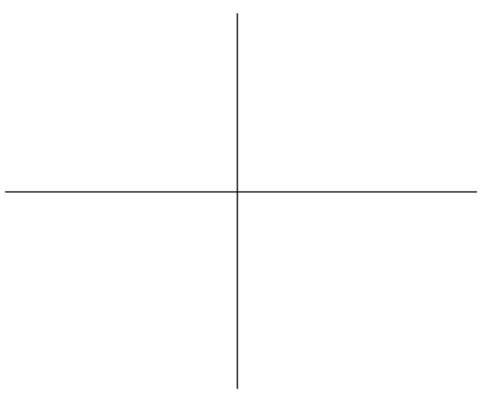
$g(x) = 4x - 2x^4 + 5x^2$

$h(x) = -(x^6 + 7x^3 + 2)$

Find a polynomial of degree 4 with integer coefficients and zeros $3i$ and 4, where 4 is a double zero.

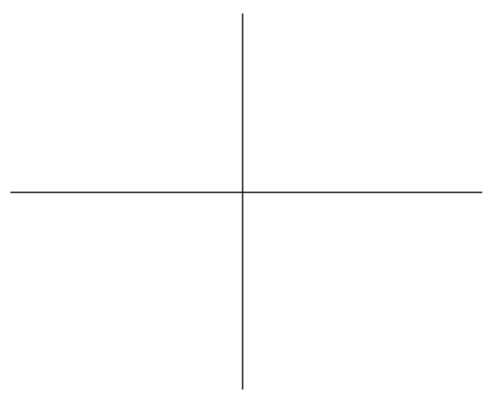
Graph $(x - 5)(x + 1)^2(x + 2)$

Label the zeros and y-intercept



Graph $x^3 + 6x^2 - 3x - 18$

Identify the linear factors



V: Composite functions

$f(x) = x^2 + 4$

$g(x) = 5x + 1$

$h(x) = 7$

Find the following:

1) $f(2)$

2) $g(-3)$

3) $h(4)$

4) $f(w + 1)$

5) $f(h(6))$

6) $h(g(5))$

7) $(g \circ g)(x)$

8) $f(g(x))$

VI. Exponents and Roots

Evaluate: $64^{\frac{1}{3}}$ $\quad 32^{\frac{2}{5}}$ $\quad \sqrt[3]{-8}$ $\quad \left(\frac{9}{25}\right)^{-\frac{1}{2}}$

Simplify: $(3x^3 y^{-4})^2$ $\quad \left(\frac{12x^2 y^{-3}}{3x^4 yz}\right)^{-1}$ $\quad \frac{4a^2 b^5}{7bc^{-1}} \cdot (2ac^3)^{-3}$

VII. Factoring

Simplify: $3x^2 - 75$ $\quad x^4 + 3x^2 - 4$ $\quad 2x^3 + 54$ $\quad x^3 - 7x^2 - 2x + 14$

Solve:
(Include real and complex solutions) $\quad 2x^2 + 10x + 8 = 0$ $\quad 2x^2 - 5x = -2$ $\quad x^2 + 5x + 19 = 0$

Algebra II Review Questions/Topics

VIII. Polynomials and Theorems

1) What are the *possible* rational roots of the polynomial $2x^5 + 3x^2 + 7x - 6$

2) What is the remainder of $g(x) = x^{100} + x^{40} + 2x^{25} \div (x - 1)$?

3) Using synthetic division, find $x^4 - 3x^3 + 7x + 8 \div (x + 2)$

4) Find $x^4 + 5x^3 - 11x^2 + 2x + 1 \div (x^2 + 2)$

IX. Matrices

$A = \begin{bmatrix} 4 & 2 & -1 \\ 0 & 3 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 0 \\ 5 & -3 \\ 2 & 6 \end{bmatrix}$ $C = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \end{bmatrix}$

1) Identify the following elements: from A: a_{21} from B: b_{12} from C: c_{12}

2) What are the dimesions of each matrix? A: B: C:

3) Find the following:

$A + 2C =$ $AB =$ $BA =$ $AC =$

X. Word Problems

1) A company invested $100,000 in 3 funds.
   Last year, the growth fund earned 12%, the income fund earned 8%, and the money market fund yielded 5%. So, after one year, the company had $109,000.
   If the company invested twice as much in the income fund as the money market fund, how much did it invest in each fund?

2) A math test consists of number problems and graphing problems. Number problems are worth 6 points each, and graphing problems are worth 10 points each. You can accurately solve a number problem in 2 minutes and a graphing problem in 4 minutes. Assuming you have 40 minutes and may choose no more than 12 problems, to answer, how many of each type should you solve to get the highest score? What is that highest score?

XI. Imaginary and Complex Numbers

1) $(5i - 6)^2 =$

2) $2i^{25} + 4i^{11} + 2i^{20} =$

3) $\dfrac{3i + 4}{4i - 9} =$

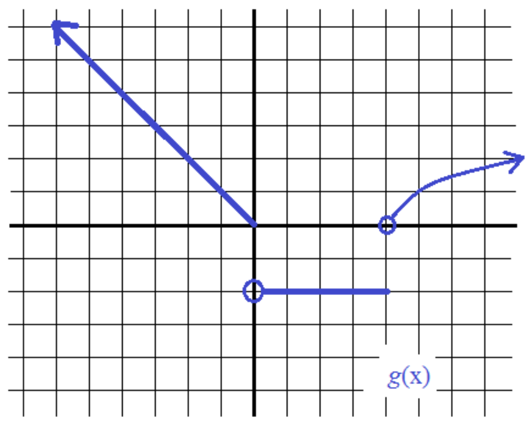
XII. Piecewise Functions

$$h(t) = \begin{cases} \sqrt{(-t)}, & \text{if } t < -3 \\ 5, & \text{if } 0 \leq t < 5 \\ -2t, & \text{if } 5 \leq t \end{cases}$$

$h(-4) =$

$h(5) =$

$h(10) =$



(**challenge)

What is the domain and range of each function? ?

$h(x)$: Domain -

Range -

$g(x)$: Domain -

Range -

$g(-3) =$

$g(4) =$

$g(5) =$

$g(-20) =$

XIII. Three more questions

1) Change to vertex form
(i.e complete the square)

$y = 2x^2 + 8x + 11$

2) Solve and graph on number line

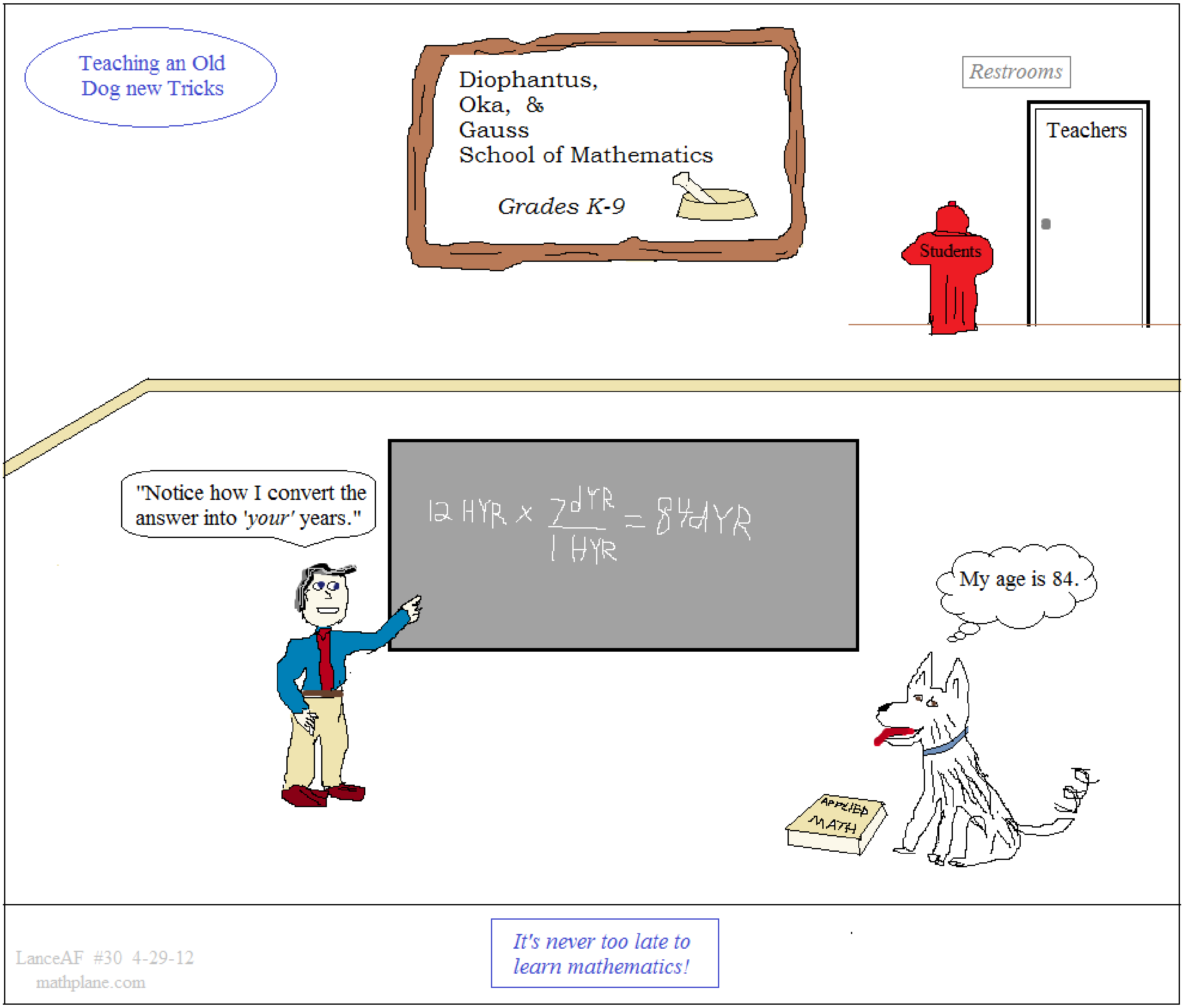
$3|x - 5| - 7 > 8$

3) Circle the irrational numbers

$3 \quad 0 \quad 3/2 \quad \pi \quad -\sqrt{16}$

$.243 \quad \sqrt{7} \quad 3i \quad .23\overline{23}$

Good luck on your final exam!



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SOLUTIONS -→

Algebra II Review Questions/Topics

SOLUTIONS

I. Linear

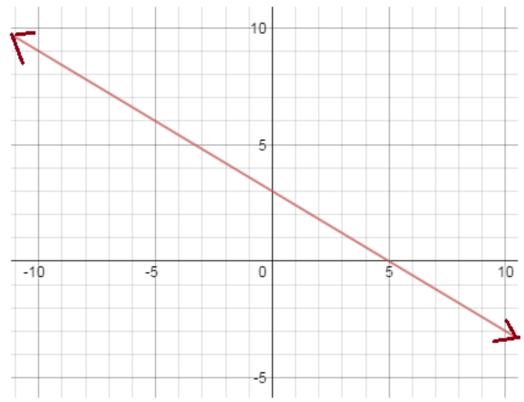
line A: $3x + 5y = 15$ (standard form)

a) What is the x-intercept? y-intercept?

b) Graph line A

x-intercept: where $y = 0$
$3x + 5(0) = 15$
$x = 5$
(5, 0)

y-intercept: where $x = 0$
$3(0) + 5y = 15$
$y = 3$
(0, 3)



c) Line B is parallel to A and goes through (−4, 10).
What is the equation of Line B

For line, we need a point and the slope
point: (-4, 10)
slope: parallel to line A
slope of line A is
$5y = -3x + 15$
$y = (-3/5)x + 15$

in point slope form: $(y - 10) = \frac{-3}{5}(x + 4)$

in slope intercept form: $y - 10 = \frac{-3x}{5} - \frac{12}{5}$

$y = \frac{-3}{5}x + \frac{38}{5}$

II. Quadratic

parabola A: $x^2 + 8x - 20$ (standard form)

a) Write the equation of A in *vertex form*

Complete the square!

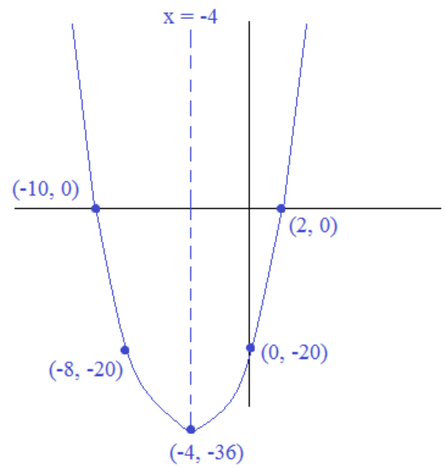
separate the x's: $x^2 + 8x \quad - 20$

complete the square: and balance $(x^2 + 8x + 16) - 20 - 16$

factor and collect terms: $(x + 4)^2 - 36$

b) Write the equation of A in *factored (intercept) form*

$(x + 10)(x - 2)$



c) Graph the curve. Label the axis of symmetry, vertex, any x-intercepts, and y-intercept

vertex: (-4, -36)
x-intercepts: (-10, 0) (2, 0) axis of symmetry: $x = -4$
y-intercept: (0, -20)

Miscellaneous:

1) What is the vertex of $3x^2 + 6x - 90$ $\quad \frac{-b}{2a} = \frac{-6}{2(3)} = -1$ (axis of symmetry) vertex is on axis of symmetry!

$3(-1)^2 + 6(-1) - 90 = -93$ $\quad$ **(−1, −93)**

2) Describe the solutions of the following: real, imaginary, rational, irrational.....

$x^2 + 5x + 12$ use discriminant: $b^2 - 4ac$ ----> $(5)^2 - 4(1)(12) = -23$ ----> since discriminant < 0, 2 IMAGINARY

$3x^2 + 12x + 9$ use discriminant: $b - 4ac$ ----> $(12)^2 - 4(3)(9) = 36$ ----> since discriminant > 0, 2 REAL
since discriminant is perfect square, 2 RATIONAL

$x^2 - 14x + 49$ discriminant: $(-14)^2 - 4(1)(49) = 0$ ----> since discriminant = 0, 1 REAL solution

$-2(x^2 + 4) - 11$ vertex is (-4, -11); curve faces DOWN ----> no x-intercepts! 2 IMAGINARY

$-x^2 + 4x + 15$ discriminant: $(4)^2 - 4(-1)(15) = 76$ ----> since discriminant > 0, 2 REAL
since 76 is <u>not</u> a perfect square, 2 IRRATIONAL

$(x + 4)(x - 2)$ there are 2 zeros! ----> 2 REAL solutions

III. Absolute Values

SOLUTIONS

Algebra II Review Questions/Topics

$y = -3|x - 5| + 12$

a) Identify the vertex, axis of symmetry, y-intercept, and any x-intercepts

$y = a|x - h| + k$

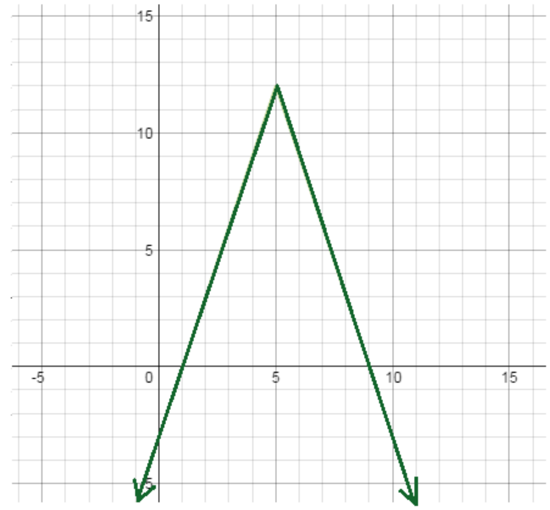
vertex (h, k): (5, 12)
axis of symmetry: x = 5

y-intercept: when x = 0,
$y = -3|0 - 5| + 12 = -3$
(0, -3)

x-intercept: when y = 0
$0 = -3|x - 5| + 12$
$-12 = -3|x - 5|$
$4 = |x - 5|$
$4 = x - 5 \quad -4 = x - 5$

(9, 0)
(1, 0)

b) Graph the equation



c) What is the domain? Range?

domain: all real $(-\infty, \infty)$
range: $y \le 12$ $(-\infty, 12]$

IV: Polynomials

Describe the end behavior of the following:

$f(x) = (x + 3)^2(x - 13)$
degree: 3
lead coefficient: $1 > 0$
"up right, down left"
as $x \to \infty$, $f(x) \to \infty$
as $x \to -\infty$, $f(x) \to -\infty$

$g(x) = 4x - 2x^4 + 5x^2$
degree: 4
lead coefficient: -2
"down left, down right"
as $x \to \infty$, $g(x) \to -\infty$
as $x \to -\infty$, $g(x) \to -\infty$

$h(x) = -(x^6 + 7x^3 + 2)$
degree: 6
lead coefficient: -1
"down left, down right"
as $x \to \infty$, $g(x) \to -\infty$
as $x \to -\infty$, $g(x) \to -\infty$

Find a polynomial of degree 4 with integer coefficients and zeros $3i$ and 4, where 4 is a double zero.

since $3i$ is a zero, $-3i$ must be a zero ("conjugate theorem")

$(x - 3i)(x - -3i) \longrightarrow (x - 3i)(x + 3i) = (x^2 + 9)$

since 4 is a double zero $\longrightarrow (x - 4)(x - 4)$

$y = (x^2 + 9)(x - 4)^2$ another solution: $y = 3(x^2 + 9)(x - 4)^2$

Graph $(x - 5)(x + 1)^2(x + 2)$

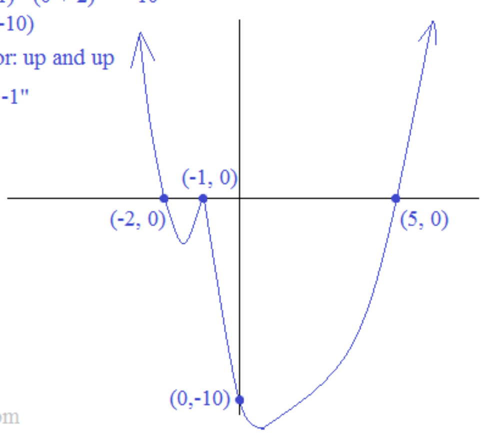
Label the zeros and y-intercept

zeros: 5, -1, -1, -2
(-1 is 'double zero' or zero w/multiplicity 2)

y-intercept:
$(0 - 5)(0 + 1)^2(0 + 2) = -10$
(0, -10)

end behavior: up and up

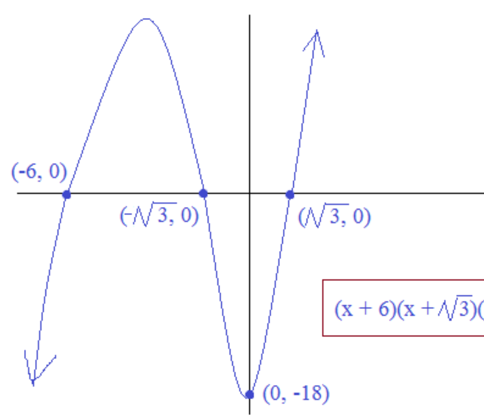
"bounce at -1"



Graph $x^3 + 6x^2 - 3x - 18$

Identify the linear factors

to find intercepts: factor by grouping
$x^3 + 6x^2 \quad - 3x - 18$
$x^2(x + 6) \quad -3(x + 6)$
$(x^2 - 3)(x + 6)$



$(x + 6)(x + \sqrt{3})(x - \sqrt{3})$

SOLUTIONS

V: Composite functions

$f(x) = x^2 + 4$

$g(x) = 5x + 1$

$h(x) = 7$

Find the following:

1) $f(2)$ $\quad (2)^2 + 4 = \boxed{8}$

2) $g(-3)$ $\quad 5(-3) + 1 = \boxed{-14}$

3) $h(4)$ $\quad$ every input of h = $\boxed{7}$

4) $f(w + 1)$ $\quad (w + 1)^2 + 4$

$(w + 1)(w + 1) + 4$

$\boxed{w^2 + 2x + 5}$

5) $f(h(6))$ $\quad h(6) = 7$ then, $f(7) = \boxed{53}$

6) $h(g(5))$ $\quad g(5) = 26$ then, $h(26) = \boxed{7}$

7) $(g \circ g)(x)$ $\quad g(g(x))$ ----> $g(x) = 5x + 1$

then, $g(5x + 1) = 5(5x + 1) + 1$

$\boxed{25x + 6}$

8) $f(g(x))$ $\quad f(5x + 1) =$

$(5x + 1)^2 + 4 = (5x + 1)(5x + 1) + 4$

$\boxed{25x^2 + 10x + 5}$

VI. Exponents and Roots

Evaluate:

$64^{\frac{1}{3}}$ $\quad \sqrt[3]{4 \cdot 4 \cdot 4}$ $\quad \boxed{4}$

$32^{\frac{2}{5}}$ $\quad (32^{\frac{1}{5}})^2$ $\quad (2)^2 = \boxed{4}$

$\sqrt[3]{-8}$ $\quad \boxed{-2}$ because $(-2)(-2)(-2) = 8$

$\left(\frac{9}{25}\right)^{-\frac{1}{2}}$ $\quad \left(\frac{25}{9}\right)^{\frac{1}{2}} = \frac{\sqrt{25}}{\sqrt{9}} = \boxed{\frac{5}{3}}$

Simplify:

$(3x^3 y^{-4})^2$ $\quad 9x^6 y^{-8}$ $\quad \boxed{\frac{9x^6}{y^8}}$

$\left(\frac{12x^2 y^{-3}}{3x^4 yz}\right)^{-1}$ $\quad$ "flip the fraction" $\frac{3x^4 yz}{12x^2 y^{-3}}$ $\quad$ combine "like" terms $\boxed{\frac{1x^2 y^4 z}{4}}$

$\frac{4a^2 b^5}{7bc^{-1}} \cdot (2ac^3)^{-3}$

$\frac{4a^2 b^5 c^1}{7b} \cdot \frac{1}{(2ac^3)^3}$

$\frac{4a^2 b^4 c^1}{7} \cdot \frac{1}{8a^3 c^9} = \boxed{\frac{b^4}{14ac^8}}$

VII. Factoring

Simplify: $3x^2 - 75$

GCF: $3(x^2 - 25)$

difference of squares: $\boxed{3(x + 5)(x - 5)}$

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

multiplies to -4
adds to +3

$\boxed{(x + 4)(x - 1)}$

$2x^3 + 54$

GCF: $2(x^3 + 27)$ (A^3, B^3)

sum of cubes: $\boxed{2(x + 3)(x^2 - 3x + 9)}$

$x^3 - 7x^2 - 2x + 14$

factor by grouping: $x^3 - 7x^2 \quad -2x + 14$

$x^2(x - 7) \quad - 2(x - 7)$

$\boxed{(x^2 - 2)(x - 7)}$

Solve:
(Include real and complex solutions)

$2x^2 + 10x + 8 = 0$

Divide by 2 (GCF) $\quad x^2 + 5x + 4 = 0$

Factor $\quad (x + 1)(x + 4) = 0$

Solve (zero product property) $\quad \boxed{x = -1, -4}$

$2x^2 - 5x = -2$

$2x^2 - 5x + 2 = 0$

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

$\boxed{x = 1/2, 2}$

$x^2 + 5x + 19 = 0$

the discriminant: $b^2 - 4ac = (5)^2 - 4(1)(19)$

$= -51 < 0$ NO REAL

Use Quadratic Formula

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-5 \pm \sqrt{-51}}{2}$

$\boxed{x = \frac{-5 \pm i\sqrt{51}}{2}}$

VIII. Polynomials and Theorems SOLUTIONS

1) What are the *possible* rational roots of the polynomial $2x^5 + 3x^2 + 7x - 6$

factors of constant ('p'): 1, 2, 3, 6

factors of lead coefficient ('q'): 1, 2

1, 2, 3, 6, 1/2, 3/2

-1, -2, -3, -6, -1/2, -3/2

2) What is the remainder of $g(x) = x^{100} + x^{40} + 2x^{25} \div (x - 1)$?

Taking advantage of the *remainder theorem*, we can find $g(1)$ to get the remainder!

$g(1) = 1^{100} + 1^{40} + 2(1)^{25} = 4$

3) Using synthetic division, find $x^4 - 3x^3 + 7x + 8 \div (x + 2)$

-2	1	-3	0	7	8
		-2	10	-20	26
	1	-5	10	-13	34

$1x^3 - 5x^2 + 10x - 13$ Remainder 34

$x^3 - 5x^2 + 10x - 13 + \frac{34}{(x+2)}$

4) Find $x^4 + 5x^3 - 11x^2 + 2x + 1 \div (x^2 + 2)$

Use Polynomial Long Division:

$$
\begin{array}{r}
x^2 + 5x - 13 \\
x^2 + 2 \;\big)\; x^4 + 5x^3 - 11x^2 + 2x + 1 \\
-(x^4 + \quad 2x^2) \\
\hline
5x^3 - 13x^2 \\
-(5x^3 \quad + 10x) \\
\hline
-13x^2 - 8x \\
-(-13x^2 \quad - 26) \\
\hline
-8x + 27
\end{array}
$$

$x^2 + 5x - 13 + \frac{-8x + 27}{x^2 + 2}$

IX. Matrices

$A = \begin{bmatrix} 4 & 2 & -1 \\ 0 & 3 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 0 \\ 5 & -3 \\ 2 & 6 \end{bmatrix}$ $C = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \end{bmatrix}$

1) Identify the following elements: from A: a_{21} from B: b_{12} from C: c_{12}

row2, column1: 0 row1, column2: 0 row1, column2: 3

2) What are the dimesions of each matrix? A: 2 x 3 B: 3 x 2 C: 2 x 3

row x column

3) Find the following:

A + 2C =

$\begin{bmatrix} 4 & 2 & -1 \\ 0 & 3 & 5 \end{bmatrix} + \begin{bmatrix} 4 & 6 & 2 \\ 2 & 4 & 6 \end{bmatrix} = \begin{bmatrix} 8 & 8 & 1 \\ 2 & 7 & 11 \end{bmatrix}$

AB = $\begin{bmatrix} 4 & 2 & -1 \\ 0 & 3 & 5 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 5 & -3 \\ 2 & 6 \end{bmatrix}$

$\begin{bmatrix} 4 + 10 - 2 & 0 - 6 - 6 \\ 0 + 15 + 10 & 0 - 9 + 30 \end{bmatrix}$

$\begin{bmatrix} 12 & -12 \\ 25 & 21 \end{bmatrix}$

BA = $\begin{bmatrix} 1 & 0 \\ 5 & -3 \\ 2 & 6 \end{bmatrix} \begin{bmatrix} 4 & 2 & -1 \\ 0 & 3 & 5 \end{bmatrix}$

$\begin{bmatrix} 4 + 0 & 2 + 0 & -1 + 0 \\ 20 + 0 & 10 - 9 & -5 - 15 \\ 8 + 0 & 4 + 18 & -2 + 30 \end{bmatrix} \rightarrow \begin{bmatrix} 4 & 2 & -1 \\ 20 & 1 & -20 \\ 8 & 22 & 28 \end{bmatrix}$

AC = 2 x 3 · 2 x 3

insides must be same..

Therefore, UNDEFINED

X. Word Problems

SOLUTIONS

1) A company invested \$100,000 in 3 funds.
Last year, the growth fund earned 12%, the income fund earned 8%, and the money market fund yielded 5%. So, after one year, the company had \$109,000.
If the company invested twice as much in the income fund as the money market fund, how much did it invest in each fund?

Let G = Growth Fund
I = Income Fund
M = Money Market Fund

3 equations with 3 unknowns

$$G + I + M = 100{,}000$$

$$(1.12)G + (1.08)I + (1.05)M = 109{,}000$$

or

$$.12G + .08I + .05M = 9{,}000$$

$$2M = I \quad \text{or} \quad I - 2M = 0$$

Solve using substitution: I = 2M, so

$$G + (2M) + M = 100{,}000$$
$$(.12)G + (.08)(2M) + (.05)M = 9{,}000$$

$$G + 3M = 100{,}000$$
$$12G + 21M = 900{,}000$$

$$-7G - 21M = -700{,}000$$
$$12G + 21M = 900{,}000$$
$$5G = 200{,}000$$

G = 40,000

G + 3M = 100,000
so, M = 20,000

G + I + M = 100,000
so, I = 40,000

One method: solve using augemented matrix

$$\text{rref}\begin{bmatrix} 1 & 1 & 1 & 100000 \\ .12 & .08 & .05 & 9000 \\ 0 & 1 & -2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 40000 \\ 0 & 1 & 0 & 40000 \\ 0 & 0 & 1 & 20000 \end{bmatrix} =$$

using reduced row echelon form method:

Growth: 40,000
Income: 40,000
Money Market: 20,000

2) A math test consists of number problems and graphing problems. Number problems are worth 6 points each, and graphing problems are worth 10 points each. You can accurately solve a number problem in 2 minutes and a graphing problem in 4 minutes. Assuming you have 40 minutes and may choose no more than 12 problems, to answer, how many of each type should you solve to get the highest score? What is that highest score?

1) Identify and label variables: N = # of number problems G = # of graphing problems

2) Determine the objective function: "how many to get highest score?"

$$6N + 10G = \text{Score}$$

3) List and graph the constraints: (time) $2N + 4G \leq 40$

(problems) $N + G \leq 12$

4) Test the corner points of the feasibility region

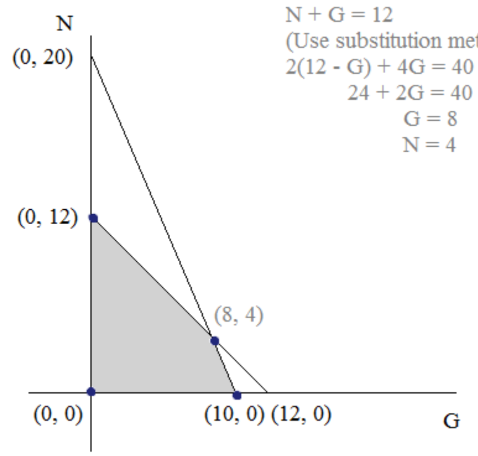
$(0, 0): \ 6(0) + 10(0) = 0$

$(0, 12): \ 6(12) + 10(0) = 72$

$(8, 4): \ 6(4) + 10(8) = \boxed{104}$

$(10, 0): \ 6(0) + 10(10) = 100$

2N + 4G = 40
N + G = 12
(Use substitution method)
2(12 - G) + 4G = 40
24 + 2G = 40
G = 8
N = 4



Under the test constraints, answering 8 graphing problems and 4 number problems would get the best score!

The maximum score would be 104..

XI. Imaginary and Complex Numbers

SOLUTIONS

1) $(5i - 6)^2 =$

$(5i - 6)(5i - 6) =$

$25i^2 - 30i - 30i + 36 =$

$-25 - 60i + 36 =$

$\boxed{11 - 60i}$

2) $2i^{25} + 4i^{11} + 2i^{20} =$

$2i^{24}i + 4i^{8}i^{3} + 2i^{20}$

$2(1)i + 4(1)(-i) + 2(1)$

$2i - 4i + 2$

$\boxed{-2i + 2}$

3) $\dfrac{3i + 4}{4i - 9} =$

$\dfrac{3i + 4}{4i - 9} \cdot \dfrac{4i + 9}{4i + 9} =$

$\dfrac{12i^2 + 16i + 27i + 36}{16i^2 - 81} =$

$\dfrac{24 + 43i}{-97} = \boxed{\dfrac{-24}{97} + \dfrac{-43}{97}i}$

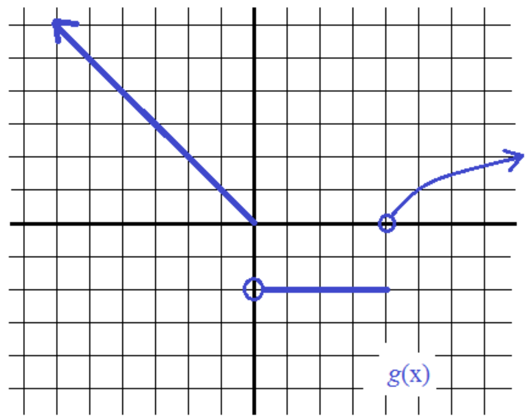
XII. Piecewise Functions

$$h(t) = \begin{cases} \sqrt{(-t)}, & \text{if } t < -3 \\ 5, & \text{if } 0 \leq t < 5 \\ -2t, & \text{if } 5 \leq t \end{cases}$$

$h(-4) = \sqrt{(-(-4))} = \boxed{2}$

$h(5) = -2(5) = \boxed{-10}$

$h(10) = -2(10) = \boxed{-20}$



(**challenge)

What is the domain and range of each function?

$h(x)$: Domain - $(-\infty, -3) \cup (-3, \infty)$

Range - $(-\infty, -10] \cup (\sqrt{3}, \infty)$

$g(x)$: Domain - $(-\infty, \infty)$

Range - $g(x) = -2$ or $g(x) \geq 0$

$g(-3) = \boxed{3}$

$g(4) = \boxed{-2}$

$g(5) = \boxed{1}$

$g(-20) = \boxed{20}$

$g(x) = -x$ if $x \leq 0$

XIII. Three more questions

1) Change to vertex form (i.e complete the square)

separate the x's from rest: $y = 2x^2 + 8x + 11$

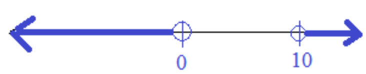
factor out 2: $y = 2(x^2 + 4x \quad) + 11$

complete the square: $y = 2(x^2 + 4x + 4\ ) + 11 - 8$

$\boxed{y = 2(x + 2)^2 + 3}$

2) Solve and graph on number line

$3|x - 5| - 7 > 8$



$3|x - 5| > 15$

$|x - 5| > 5$

$x - 5 > 5 \qquad x - 5 < -5$

$\boxed{x > 10 \text{ or } x < 0}$

3) Circle the irrational numbers

3 0 3/2 (π) $-\sqrt{16}$

.243 ($\sqrt{7}$) $3i$ $.2\overline{323}$

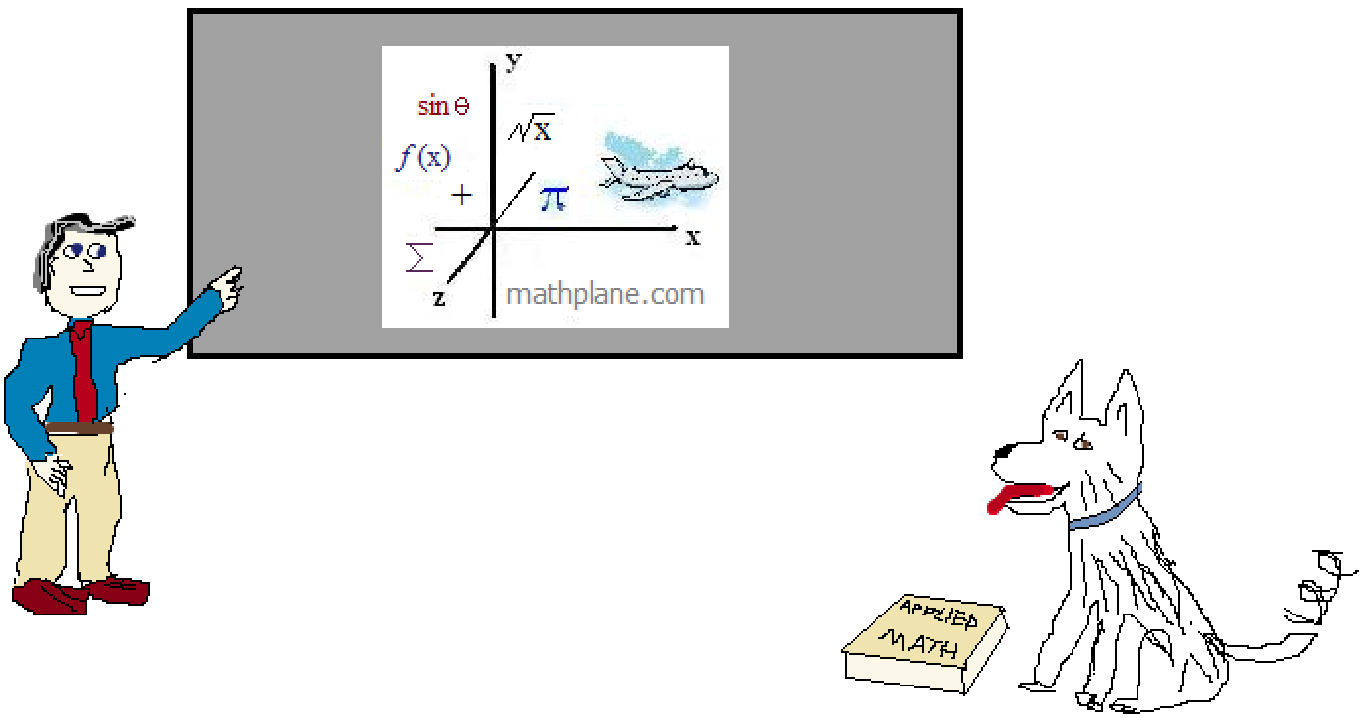
imaginary

Good luck on your final exam!

Thanks for visiting. (Hope it helped!)

If you have questions, suggestions, or requests, let us know.

Good luck!



Also, at Facebook, Google+, Pinterest, and TeachersPayTeachers

Thanks for your support. Any proceeds go to the mathplane site (and treats for Oscar the dog!)