Homework Answers:

Pp. 202-203

Quiz No Calc. Tomorrow:
Complex Numbers - 3 Questions
GHW #3 Due Thursday 10/3 not Friday

4) $11-7i$ 10) $9-3i$ 16) $-1-2i$ 20) $2-6i$

24) $6+30i$ 28) $14-46i$ 32) $-33-9i$ 36) 106

40) 100 44) $5-12i$ 48) $12+16i$

52) $\frac{1}{5}+\frac{2}{5}i$ 56) $-\frac{37}{53}-\frac{3}{53}i$ 60) $\frac{-3+\sqrt{5}}{2}+\frac{3+\sqrt{5}}{2}i$

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56) $\frac{5-i}{-7+2i}\cdot\frac{-7-2i}{-7-2i}=\frac{-35-10i+7i+2i^2}{49-4i^2}=\frac{-37-3i}{53}$

$49+4$

$=\frac{-37}{53}-\frac{3}{53}i$

$a+bi$

60) $\frac{(\sqrt{5}+3i)}{1-i}\cdot\frac{(1+i)}{1+i}=\frac{\sqrt{5}+i\sqrt{5}+3i+3}{1+1}=\frac{}{2}$

$=\frac{\sqrt{5}-3}{2}+\frac{3i+i\sqrt{5}}{2}=\frac{\sqrt{5}-3}{2}+\frac{3+\sqrt{5}}{2}i$

24) $-6i(-5+i) = 30i - 6i^2 = 30i - 6(-1) = 6 + 30i$

Perfect Cubes:

Factor: $a^3 - b^3 = (a-b)(a^2+ab+b^2)$ (keep, change, plus)

$a^3 + b^3 = (a+b)(a^2-ab+b^2)$

1. $y^3 - 8$ $a=y$ $b=2$

$= (y-2)(y^2+2y+2^2)$

$= (y-2)(y^2+2y+4)$

2. $64z^3 + 27$ $a=4z$ $b=3$

$= (4z+3)((4z)^2-12z+3^2)$

$= (4z+3)(16z^2-12z+9)$

Sep 30-1:41 PM

Factoring by Grouping:

1. $x^6 + 2x^4 + x^2 + 2$

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

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

2. $2ac + 6ad - bc - 3bd$

$= 2a(c+3d) - b(c+3d)$

$= (c+3d)(2a-b)$

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Quadratic Equation:

$ax^2 + bx + c = 0$ where $a \neq 0$

Solve:

1. $9y^2 - 16 = 0$

$(3y-4)(3y+4) = 0$

$3y-4=0 \quad | \quad 3y+4=0$

$3y=4 \quad | \quad y=\frac{-4}{3}$

$y=4/3$

$y = \{\pm\frac{4}{3}\}$

2. $3 - 7x - 6x^2 = 0$ $\times -1$

$6x^2+7x-3=0$ $P=-18$, $S=7$

x	y
1	18
-2	9

$6x^2-2x+9x-3=0$

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

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

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

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

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3. $5x + 3x^2 = 2x^3$

$-5x \quad -3x^2$

$2x^3 - 3x^2 - 5x = 0$ $\quad p = -10$, $s = -3$, $-5, 2$

$x(2x^2 - 3x - 5) = 0$

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

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

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

$x = 0 \mid x = -1 \mid x = \frac{5}{2}$

$\{0, -1, 5/2\}$

4. $2x^3 - 3x^2 + 2x - 3 = 0$

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

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

$x = \frac{3}{2} \mid x^2 + 1 = 0$

$\sqrt{x^2} = \sqrt{-1}$

$x = \pm i$

$x = \{\frac{3}{2}, \pm i\}$

5. $\frac{4x^2 - 12x - 352}{4} = \frac{0}{4}$

$x^2 - 3x - 88 = 0$ $\quad p = -88$, $s = -3$

$8, -11$

$(x+8)(x-11) = 0$

$x = -8 \mid x = 11$

$\{-8, 11\}$

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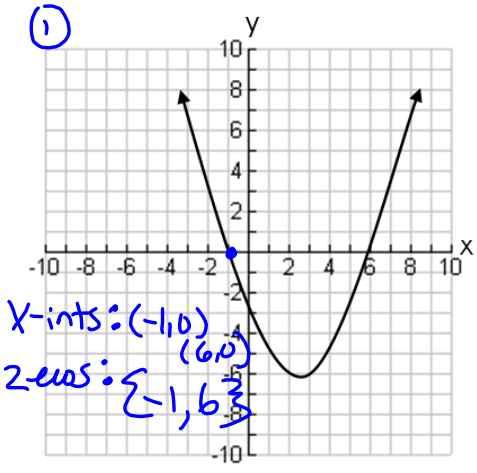
Graphs of Quadratics:

x – intercept → *(points) where the graph touches or crosses the x-axis, y = 0; Express as a point (x,0).*

zero → *(x solutions only) solution to f(x) = 0, answer in set brackets x = {..list of x values..}*

State the x-intercepts and zeros of the following:

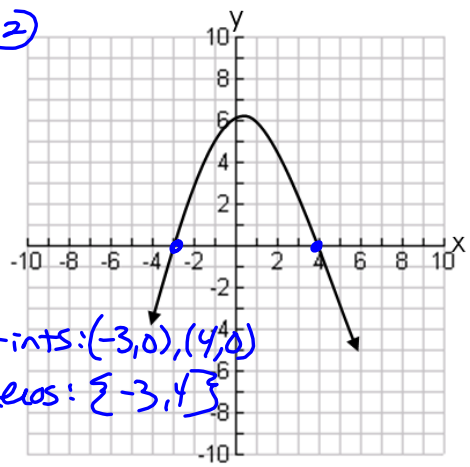
(1)



X-ints: (-1,0) (6,0)

Zeros: $\{-1, 6\}$

(2)



X-ints: (-3,0), (4,0)

Zeros: $\{-3, 4\}$

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The Politician Puzzle

A certain convention had one hundred politicians. Each politician was either crooked or honest. We are given the following two facts:

1) At least one of the politicians was honest.

2) Given any two of the politicians, at least one of the two was crooked.

Can it be determined from these two facts how many of the politicians were honest and how many were crooked?

The Lady or the Tiger?, Raymond M. Smullyan

Oct 5-8:44 AM

Homework:

pg 202:
22, 34, 53
pg 217 - 219:
4, 17, 20, 22, 25, 112
factor:
1. $64x^3 - 1$
2. $27x^3 - 8$

No Calc. Quiz Tomorrow:
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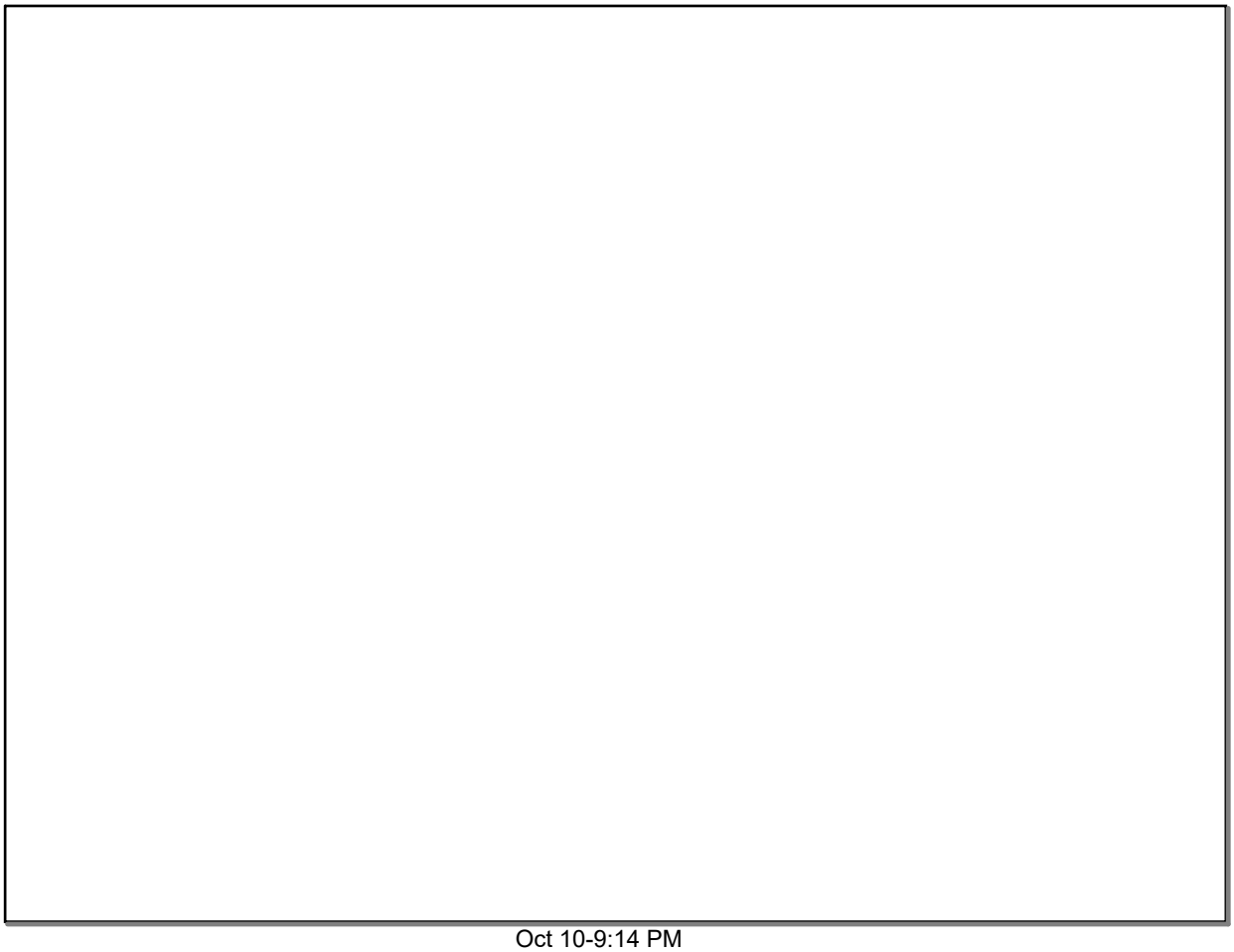

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