Warm Up in your NOTES

Find the x- and y-intercepts of

$y = \frac{1}{3}x + 12$

algebraically.

Then check with your GDC

$y = \frac{1}{3}x + 12$

y-intercept

Set $x = 0$

$y = \frac{1}{3}(0) + 12$

$y = 12$

x-int $(0, 12)$

X-intercept

Set $y = 0$

$0 = \frac{1}{3}x + 12$

$3(-12) = \frac{3}{3}x$

$-36 = x$

x-int $(-36, 0)$

Today • Solve both Simple and Typical Quadratic Equations

Have your reference sheet handy ☺

Consider "bookmarking" these pages

First, an Overview

Strategy

Simple

Typical / 3 terms

- Solve directly
- factor quickly

Strategy

Simple
- Solve directly
- factor quickly

Typical / 3 terms
factoring → ZPP
OR
Quadratic Formula

① Simple ones to Solve

$x^2 = 15$

$x = \pm\sqrt{15}$

$\frac{x^2}{6} - 6 = 0$

$\frac{x^2}{6} = 6$ (6) multiply by 6

$x^2 = 36$

$x = \pm\sqrt{36}$

$x = \pm 6$

$2x^2 - 50 = 0$

$2(x^2 - 25) = 0$ divide by 2

$x^2 - 25 = 0$

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

$a \cdot b = 0$

$x+5=0 \quad x-5=0$

$x = -5 \quad x = 5$

$2x^2 = 50$

$x^2 = 25$

slightly more difficult than simple

$n^2 - 5n = 0$

$n(n-5) = 0$

$a \cdot b = 0$

$n = 0 \quad n-5=0$, $+5 \; +5$, $n = 5$

$(x+3)^2 = 10$

$\sqrt{(x+3)^2} \quad \sqrt{}$

$x+3 = \pm\sqrt{10}$, $-3 \; -3$

$x = -3 \pm \sqrt{10}$ ✓

$n^2 - 5n = 0$

$n^2 = 5n$

$\frac{n^2}{n} = \frac{5n}{n}$

$n = 5$

② Typical Quadratic Equations

Always set equal to zero first if there are three terms

$n^2 - 5n = 0$

Strategy

Simple
- Solve directly
- factor quickly

Typical /3 terms
- factoring → ZPP
  OR
  Quadratic Formula

A) by factoring + ZPP

$14x^2 = 2 - 3x$ (+3x)

$14x^2 + 3x - 2 = 0$

$(2x+1)(7x-2) = 0$

ZPP

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

$2x = -1$

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

$7x-2=0$

$7x = 2$

$x = \frac{2}{7}$

2x 1

7x | $14x^2$ | 7x

-2 | -4x | -2

$-28x^2$

3x

-x 28x

x -28x

-2x 14x

2x -14x

-4x 7x

4x -7x

If it can't be factored, then you must use the quadratic formula.

B.B.

Strategy

Typical /3 terms

factoring → ZPP ← not every quadratic can be factored

OR

Quadratic Formula ← Always works

There will not be any homework tonight.

☺

We will work hard right up to the end of the period

(B) The Quadratic Formula

Look at your reference sheet and write down the Quadratic Formula in your notes.

$ax^2 + bx + c = 0$

$7x^2 - 2x - 6 = 0$

QF.

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

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

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

doesn't always have to be x

the letters are the coefficients

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

Shell ↳ $x =$

example: $14x^2 + 3x + 5 = 7$

Another example: $-5x = 3x^2 + 2$

$-2 \quad -2$

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

$a = -3$

$b = -5$

$c = -2$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(-3)(-2)}}{2(-3)}$$

$$x = \frac{5 \pm \sqrt{1}}{-6} = \frac{5 \pm 1}{-6}$$

$x = \frac{5+1}{-6} = \frac{6}{-6} = -1$ $\quad x = \frac{5-1}{-6} = \frac{4}{-6} = -\frac{2}{3}$

See your test

Assignment:

none ☺

LCQ (open NOTES)

Solve ① $2n^2 - 8 = 0$

② $x^2 - 11x + 10 = 0$ ← Use any method