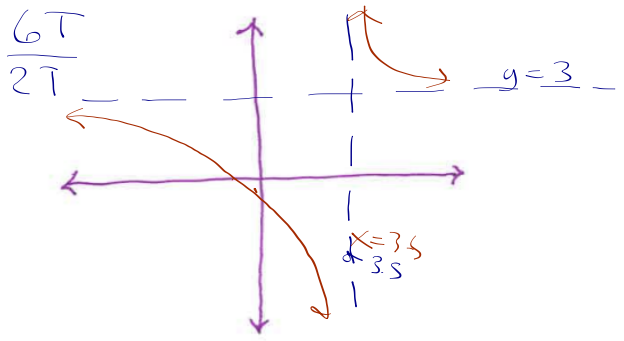
Pick Up the Warm Up

Check work from HW

(Any questions ?)

① Make a sketch of the Rational function $f(x) = \frac{6x+7}{2x-7}$ Label the sketch appropriately

$2x-7=0$
$2x=7$
$x=3.5$



② Decribe all discontinuites

VA at $x=3.5$

You should be able to write the domain and range of f(x)

③ Create an equation of a circle with radius 12 whose center is (-100, -90)

$(x+100)^2+(y+90)^2=144$

(4) $x^2 - 8y - 12x + y^2 = 12$

$x^2 - 12x \;\; y^2 - 8y = 12$ $+36 \; +16 \; +36 \; +16$

$x^2 - 12x + 36 \;\; y^2 - 8y + 16 = 12 + 36 + 16$

$(x-6)^2 + (y-4)^2 = 64$

center $(6, 4)$

radius 8

5 a. How do I know if an equation is quadratic?

circle any from

$10 = 3x - 7$

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

$5x^2 - 8x + 100 = 7$

$3x^2 - x + 1$

$(x-2)^2 = 17$

$x^2 - 1 = 0$

5b) what are the two ways to solve a quadratic equation?

1) Quad. formula

2) Factoring + ZPP

huh? → 3) Completing the Square

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(6) $\frac{4a-4b}{(a+1)^2} \div \frac{6b-6a}{a^2-1}$

three things to factor

$\frac{4(a-b)}{(a+1)^2} \cdot \frac{a^2-1}{6b-6a}$

$\frac{2\cancel{4}(a-b)}{(a+1)^{\cancel{2}1}} \cdot \frac{(a+1)(a-1)}{\cancel{6}(b-a)}$

$\cancel{36}(a-b)$

$\rightarrow \frac{2(a-1)}{-3(a+1)}$

$\rightarrow \boxed{-\frac{2(a-1)}{3(a+1)}}$

(7) $x^2 - 25 = (x+5)(x-5)$

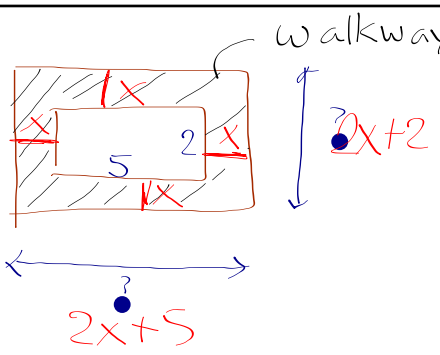
$a^2 - b^2 = (a+b)(a-b)$

$\boxed{a}^2 - \boxed{b}^2$

HW

123

UNIform width



$40 = (2x+5)(2x+2)$

106

Lexington HS growth rate 4.7%

3 years ago there were 1500 students

a) How many are there now?

b) How many were there 5 years ago?

c) In n years?

In your notes

A third method to solve a quadratic equation

Methods to solve a quadratic equation:

- Factor, then use zero prod. property
- Quadratic Formula
- Use Completing the Square to solve a quadratic equation

Today's AIM

Use completing the square to solve a quadratic equation ✓

Simplify complex Algebraic fractions

$x^2 - 4x - 5 = 0$

$+5 \quad +5$

Rewrite equation focusing on first two terms

$x^2 - 4x + 4 = 5 + 4$

$(x-2)^2 = 9$

$\sqrt{\quad} \qquad \sqrt{\quad}$

$x - 2 = \pm 3$

$x - 2 = 3 \qquad x - 2 = -3$

$+2 \quad +2$

$x = 5 \qquad x = -1$

Another:

$x^2 = 10 - 12x$

$x^2 + 12x - 10 = 0$

$-x^2 + 12x$

$-x^2 - 12x + 10$

$x^2 + 12x + 36 = 10 + 36$

$\sqrt{(x+6)^2} = \sqrt{46}$

$x + 6 = \pm\sqrt{46} \longrightarrow x = -6 \pm \sqrt{46}$

$x + 6 = \sqrt{46}$ $\quad x + 6 = -\sqrt{46}$

$-6 \quad -6 \quad -6 \quad -6$

$x = -6 + \sqrt{46} \quad x = -6 - \sqrt{46}$

$3n^2 - 18n + 20 = 0$

↑ can't have 3 when completing the square so divide by 3

$n^2 - 6n + \frac{20}{3} = 0$

$-\frac{20}{3} + \frac{9(3)}{1(3)}$

$-20 + 27$

$n^2 - 6n + 9 = -\frac{20}{3} + 9$

$\sqrt{(n-3)^2} = \sqrt{\frac{7}{3}}$

$n - 3 = \pm\sqrt{\frac{7}{3}}$

$n = 3 \pm \sqrt{\frac{7}{3}}$

BB

Simplify a complex fraction

$$\frac{\frac{10}{7y}+\frac{1}{7y}}{\frac{5}{y}} \rightarrow \frac{\frac{11}{7y}}{\frac{5}{y}} \rightarrow \frac{11}{7y}\cdot\frac{y}{5} \rightarrow \boxed{\frac{11}{35}}$$

$$\frac{\frac{5}{x} - \frac{2}{1}(x)}{\frac{1}{5x} + \frac{3}{5x}} \rightarrow \frac{\frac{5-2x}{x}}{\frac{5+3}{5x}} \rightarrow \frac{\frac{5-2x}{x}}{\frac{8}{5x}}$$

$$\frac{5-2x}{x} \cdot \frac{5x}{8}$$

$$\frac{5(5-2x)}{8}$$

Partner LCQ

Test Information

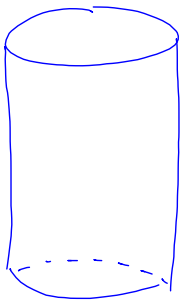
for • Ch. 3 Test

on • Wed Feb 19

Assignment **3** .... **113, 116 to 118**

..... **do 119 with your GDC**

Ch. 3 Test next Wed



$$V = \pi r^2 h$$

$$SA = 2\pi r^2 + 2\pi r h$$

Volume to SA ratio

$$\frac{V}{SA} = \frac{\pi r^2 h}{2\pi r^2 + 2\pi r h}$$

Simplify it