Fall 2012 Test 1 Practice

Homework Notes

Practice Tests Link

AND $\cap$

$|3x+2| < 7 \Rightarrow$

$-7 < 3x+2 < 7$

is ok

OR $\cup$

$|3x+2| > 7 \Rightarrow$

$-7 > 3x+2 > 7$

is NOT ok.

$2/3\,x$ is not ok $\frac{2}{3}x$ NOT OK

$\frac{2}{3}x$ is ok. $\frac{2x}{3}$ is ok $(2/3)x$ is ok

I might add a shared work problem.

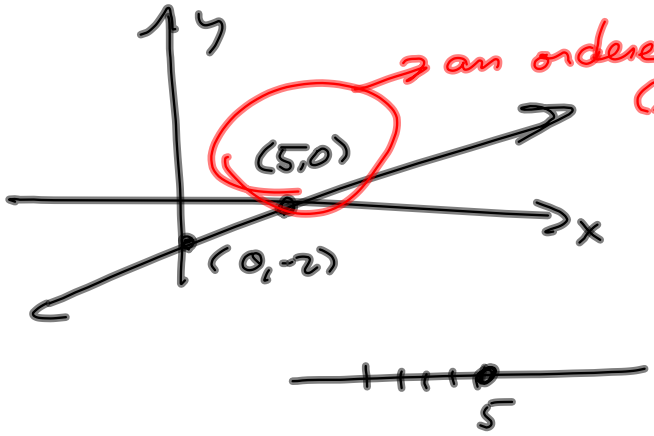
otherwise, nothing different from the C1 Test you did.

Homework Notes

I want ordered pair labels, not tickmarks

$2x-5y=10$

x	y
0	-2
5	0



Completing the square

$$x^2+bx = x^2+bx+\left(\frac{b}{2}\right)^2-\frac{b^2}{4}$$

$$= \left(x+\frac{b}{2}\right)^2-\frac{b^2}{4}$$

The cheat for getting $f(x)=ax^2+bx+c$ in the form $f(x)=a(x-h)^2+k$

$$= a\left(x+\frac{b}{2a}\right)^2+f\left(-\frac{b}{2a}\right)$$

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

$a=1, b=-4, c=2$

$-\frac{b}{2a}=-\frac{-4}{2(1)}$ $+2=h$ silly!

$f\left(-\frac{b}{2a}\right)=(2)^2-4(2)+2$ $+2$ idiot!

$=4+8+2=14=k$

So $f(x)=a(x-h)^2+k$

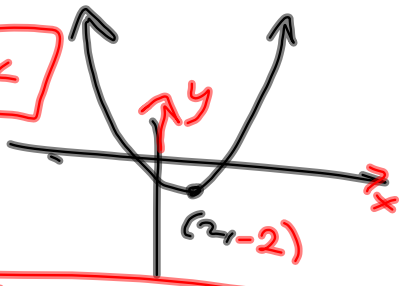
$=1(x-(+2))^2-2$

$=(x-2)^2-2$

$-2=k$

$(h,k)=(2,-2)$

This is re-writing the expression for a quadratic function.



"Complete the square & write $f(x)$ in the form $a(x-h)^2+k$."

Closely-related question:

Solve $x^2-4x+2=0$ by completing the square.

Using the chart:

$-\frac{b}{2a} = -\frac{-4}{2} = +2 = h$

$f(-\frac{b}{2a}) = 2^2-4(2)+2$

$= 4-8+2$

$= -2 = k$

So

x^2-4x+2

$= (x-2)^2-2$ SET $\overset{\text{SET}}{=} 0$

$\Rightarrow (x-2)^2 = 2$, etc.

$x^2-4x = -2$

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

$(x-2)^2 = 2$

$x-2 = \pm\sqrt{2}$

$x = 2\pm\sqrt{2} \Rightarrow x \in \{2\pm\sqrt{2}\}$

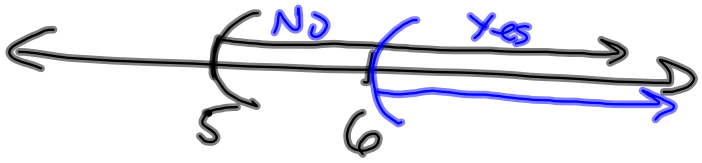
Aug 28-8:10 AM

Resources:

Practice Tests on Course Website

Videos from online

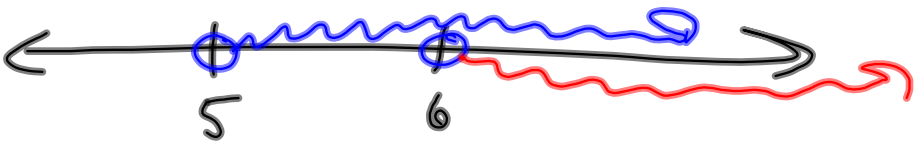
$x > 5$ and $x > 6$ means $x > 6$



means $x \in (6, \infty)$

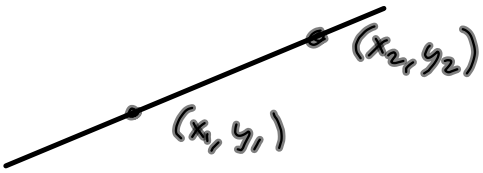
or $x \in \{x / x > 6\}$

$x = 6 \Rightarrow x \in \{6\}$.



Lines

$m = \frac{y_2-y_1}{x_2-x_1} = m$



$y_2 - y_1 = m(x_2 - x_1)$

$y - y_1 = m(x - x_1)$ is point-slope.

$y = m(x - x_1) + y_1$

Line between (x_1, y_1) $(2, 3)$ & (x_2, y_2) $(-5, -2)$

$m = \frac{y_2-y_1}{x_2-x_1} = \frac{-2-3}{-5-2} = \frac{-5}{-7} = \frac{5}{7}$

$y = m(x - x_1) + y_1$

$y = \frac{5}{7}(x-2)+3$ STOP!

$\left(\frac{5}{7}\right)(-2) = \frac{5}{7} \cdot \frac{-2}{1} = \frac{-10}{7}$

If I ask for AN equation.

The slope-intercept form:

$y = \frac{5}{7}x - \frac{10}{7} + \frac{21}{7}$

$y = \frac{5}{7}x + \frac{11}{7}$ is fine

$y = mx + b$

$7\left[3 = \frac{5}{7}(2) + b\right]$

$21 = 10 + 7b$

$11 = 7b$

$\frac{11}{7} = b$

$y = \frac{5}{7}x + \frac{11}{7}$

ANY Quadratic Equation, do the discriminant 1st.

Solve $x^2-5x+4=0$ by completing the square.

$x^2-5x = -4$ $\quad a=1, b=-5, c=4$

$b^2-4ac = (-5)^2-4(1)(4)$

$= 25-16 = 9 = 3^2 \Rightarrow$ factors by AC.

$x^2-5x+\left(\frac{5}{2}\right)^2 = -4+\frac{25}{4} = \frac{-16+25}{4} = \frac{9}{4}$

$\left(x-\frac{5}{2}\right)^2 = \frac{9}{4}$

$x-\frac{5}{2} = \pm\sqrt{\frac{9}{4}} = \pm\frac{\sqrt{9}}{\sqrt{4}} = \pm\frac{3}{2}$

$x = \frac{5}{2}\pm\frac{3}{2}$ $\quad 4$, 1 $\Rightarrow x \in \{1,4\}$

Solve $x^2+6x+11=0$ by completing the square

Solve... by quadratic formula.

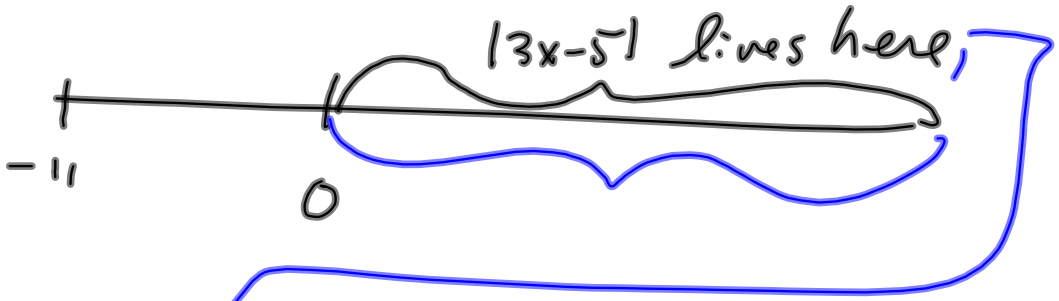
Solve:

$|3x-5|<11$ $|3x-5|>11$

$|3x-5|\leq -11$ $|3x-5|>-11$

$\emptyset$ $(-\infty,\infty)$

$\mathbb{R}$



NO MATTER WHAT x is!

$x=-1000$

$|-3000-5|=|-3005|=3005$