15 Classwork 15 MAT 1275 Professor Chiu

Name: _____

1. Solve $\sqrt{x}+2=\sqrt{3x+4}$

① Take square on both sides

$(\sqrt{x}+2)^2=(\sqrt{3x+4})^2$

$\Rightarrow x+4\sqrt{x}+4=3x+4$ (−x, −4, −x, −4)

$\Rightarrow 4\sqrt{x}=2x$

$\sqrt{x}+2$

	$\sqrt{x}$	2
$\sqrt{x}$	x	$2\sqrt{x}$
2	$2\sqrt{x}$	4

$\Rightarrow (4\sqrt{x})^2=(2x)^2$

$\Rightarrow 16\cdot x=4x^2$ (−16x, −16x)

$\Rightarrow 0=4x^2-16x$

$\Rightarrow 0=4x(x-4)$

$\Rightarrow 4x=0$ or $x-4=0$ (÷4, ÷4; +4, +4)

$\Rightarrow x=0$ or $x=4$ (both correct)

check $x=0$

Left hand $=\sqrt{0}+2=2$

Right hand $=\sqrt{3\cdot0+4}=\sqrt{4}=2$ ✓

check $x=4$

Left hand $=\sqrt{4}+2=2+2=4$,

Right hand $=\sqrt{3\cdot4+4}=\sqrt{16}=4$ ✓

2. Find a solution to the equation $3y-2x=-6$ with integer values.
How many solutions can we find for this equation?

Find an integer solution:

① $x=1$, $3y-2\cdot1=-6$ (+2, +2)

$3y=-4 \Rightarrow y=-\frac{4}{3}$ (÷3, ÷3)

(NOT integer)

② $x=2$, $3y-2\cdot2=-6$

$3y-4=-6$ (+4, +4)

$3y=-2 \Rightarrow y=-\frac{2}{3}$ (÷3, ÷3)

(NOT integer)

③ $x=3$, $3y-2\cdot3=-6$

$3y-6=-6$ (+6, +6)

$3y=0 \Rightarrow y=0$ ✓

$x=3$, $y=0$ is an integer solution

* ①, ②, ③ are solutions for $3y-2x=-6$.

but only ③ is an integer one

How many solutions?

Infinitely many solution

3. Find the equation of a line that passes through the points (-3,2) and (1,6).