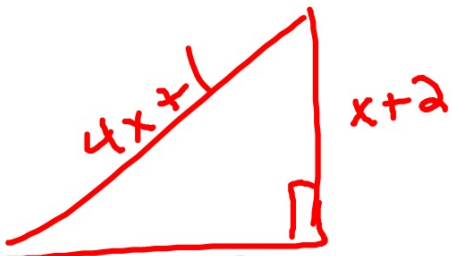
#3



$$(5x+3)^2+(x+2)^2=(4x+1)^2$$

$$(5x+3)(5x+3)+(x+2)(x+2)=(4x+1)(4x+1)$$

$$25x^2+30x+9+x^2+4x+4=16x^2+8x+1$$

$$26x^2+34x+13=16x^2+8x+1$$

$$10x^2+26x+12=0$$

Solving Quadratics by Square Root method

I can take the square root of both sides of an equation. This is only helpful in two particular circumstances!

Cannot do:

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

① I'm given something squared = something else squared

Ex) $\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

Ex) $\sqrt{(x+3)^2} = \sqrt{9}$

$x+3 = \pm 3$

$x+3=3$ or $x+3=-3$

$x=0$ or $x=-6$

Ex/ Factoring Perfect Square trinomials

$x^2+10x+25=9$

$(x+5)(x+5)=9$

$\sqrt{(x+5)^2}=\sqrt{9}$

$x+5=\pm 3$

② Any quadratic can be forced to look like $(x+h)^2=K$

↑ vertex form of a quadratic

Completing the square

Completing the square

Ex) $x^2+9x-4=0$

$x^2+9x+\frac{81}{4} = 4\cdot\frac{4}{4}+\frac{81}{4}$

$\frac{b}{2}=\frac{9}{2}$

$\left(\frac{9}{2}\right)^2=\frac{81}{4}$

$(x+\frac{9}{2})^2 = \frac{16}{4}+\frac{81}{4}$

$\sqrt{(x+\frac{9}{2})^2} = \pm\sqrt{\frac{97}{4}}$

$x+\frac{9}{2} = \pm\frac{\sqrt{97}}{2}$

$x = \frac{\pm\sqrt{97}}{2}-\frac{9}{2}$

$= \frac{\pm\sqrt{97}-9}{2}$

* in order to complete the square, the leading coefficient (a) must be 1

Ex) $3x^2 - 15x - 2 = 0$

$x^2 - 5x - \frac{2}{3} = 0$

divide all terms by 3 1st

Hw 2C p 37 odds

2D p. 38 evens