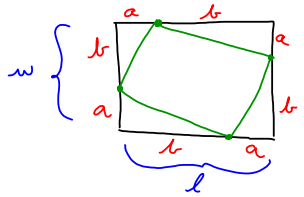
December 4, 2017

* Exam #3 – Wednesday

8.3 Completing the Square



Area: $l \cdot w$

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

$a^2 + 2ab + b^2$

Perfect Square Trinomial

Dec 4-9:06 AM

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

$= x^2 + 2(3x) + 9$

$= x^2 + 6x + 9$

* middle Term → as Area → Perfect Square Trinomial

$bx = \frac{1}{2} \cdot \frac{b}{1} = \frac{b}{2} = 3$

* Last Term: $3 \cdot 3 = 3^2 = 9$

Dec 4-9:11 AM

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

$= x^2 - 10x + 25$

$\frac{1}{2} \cdot -10$

$= -\frac{10}{2}$

$= -5$

$5^2 = 25$

Dec 4-9:11 AM

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

$x^2 + 2x + 1 = 5 + 1$

Create a Perfect Square Trinomial

Steps

Completing the Square

(a) $2 \cdot \frac{1}{2} = \frac{2}{2} = 1$

(b) $(1)^2 = 1 \cdot 1 = 1$ ← add to both sides of equation

$x^2 + 2x + 1 = 6$

P.S.T

$\sqrt{(x+1)^2} = \pm\sqrt{6}$

$x + 1 = \pm\sqrt{6}$

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

two solutions

Dec 4-9:17 AM

#1) $x^2 - 38x + c$, $c = 361$

Steps

(a) $\frac{-38}{1} \cdot \frac{1}{2} = \frac{-38}{2} = -19$

(b) $(-19)^2 = (-19)\cdot(-19) = 361$ ← add to both sides

$x^2 - 38x + 361$

P.S.T

$(x-19)^2 = (x-19)(x-19)$

$= x^2 - 19x - 19x + 361$

add

$= x^2 - 38x + 361$ ✓

Dec 4-9:28 AM

#2) $x^2 - 32x + c$

(a) $-32 \cdot \frac{1}{2} = -16$

(b) $(-16)^2 = 256$

"c"

$x^2 - 32x + 256$

Dec 4-9:35 AM

#3) $x^2 - \frac{5}{3}x + C$

(a) $-\frac{5}{3} \cdot \frac{1}{2} = \frac{-5}{6}$

(b) $\left(-\frac{5}{6}\right)^2 = \boxed{\frac{25}{36}}$ "C"

Dec 4-9:38 AM

#8) $x^2 + 7x + C$

(a) $\frac{7}{1} \cdot \frac{1}{2} = \frac{7}{2}$

(b) $\left(\frac{7}{2}\right)^2 = \boxed{\frac{49}{4}}$ "C"

Dec 4-9:40 AM

#12) $y^2 - \frac{5}{14}y + C$

(a) $-\frac{5}{14} \cdot \frac{1}{2} = -\frac{5}{28}$

(b) $\left(-\frac{5}{28}\right)^2 = \boxed{\frac{25}{784}}$ "C"

Dec 4-9:43 AM

Ways to Solve Quadratics

$ax^2 + bx + c = 0$

① Factor

$x^2 - 7x + 12 = 0$

$(x-4)(x-3) = 0$

$x = 4$ & $x = 3$

② Square Root Property

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

$x + 3 = \pm 2$

$x = \pm 2 - 3$

$x = 2 - 3 = -1$

$x = -2 - 3 = -5$

③ Completing the Square

④ Quadratic Formula

Dec 4-9:45 AM