

COMPLETING THE SQUARE

(c)  $y = x^2 + 8x$

$\frac{8}{2} = 4^2 = 16$

$y = x^2 + 8x + 16 - 16$   
 $y = (x+4)^2 - 16$

(d)  $y = x^2 - 2x + 11$

$\frac{-2}{2} = (-1)^2 = 1$

$y = x^2 - 2x + 1 - 1 + 11$   
 $y = (x-1)^2 + 10$

1. Find each of the following products in standard form.

(a)  $(x+4)^2$

(b)  $(x-1)^2$

(c)  $(x+8)^2$

(d)  $(x-7)^2$

(e)  $(x+2)^2$

(f)  $(x-10)^2$

2. Each of the following trinomials is a perfect square. Write it in factored form, i.e.  $(x+a)^2$  or  $(x-a)^2$ .

(a)  $x^2 + 6x + 9$   
 $(x+3)^2$

(b)  $x^2 - 22x + 121$   
 $(x-11)^2$

(c)  $x^2 + 10x + 25$   
 $(x+5)^2$

(d)  $x^2 + 30x + 225$   
 $(x+15)^2$

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

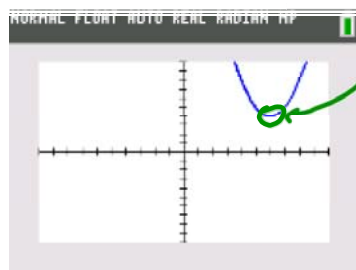
(f)  $x^2 - 18x + 81$   
 $(x-9)^2$

3. Place each of the following quadratic functions, written in standard form, into vertex form by completing the square. Then, identify the coordinates of its turning point.

(a)  $y = x^2 - 12x + 40$

$\frac{-12}{2} = -6^2 = 36$   
 $y = x^2 - 12x + 36 - 36 + 40$   
 $(x-6)^2 + 4$

vertex:  $(6, 4)$   
 x y



(b)  $y = x^2 + 4x + 14$

$x^2 + 4x + 4 - 4 + 14$   
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$(x+2)^2 + 10$

$(x+2)^2 + 10$

$(-2, 10)$   
 x y

← always share + -

HW QUESTIONS - Complete the



①  $x^2 + 10x - 30$

②  $x^2 - 14x + 2$

③  $x^2 + 2x + 10$

④  $x^2 - 6x$