

9. $x^2 + 8x - 4y + 28 = 0$

(T)

$$x^2 + 8x = 4y - 28$$

$(8 \cdot \frac{1}{2})^2$
 $x^2 + 8x + 16 = 4y - 28 + 16$

$(\frac{4}{16})^2$
 $(x+4)^2 = 4y - 12$

$$(x+4)^2 = 4(y-3)$$

$$(x+4)^2 = 4(1)(y-3)$$

\downarrow \downarrow \downarrow
 $h = -4$ $p = 1$ $k = 3$

VERTEX: $(h, k) = (-4, 3)$

FOCUS: $(h, k+p) = (-4, 3+1)$
 $= (-4, 4)$

DIR: $y = k - p$
 $y = 3 - 1$
 $y = 2$

STEPS TO WRITE IN STANDARD FORM

① GET ALL THE VARIABLES WITH SQUARED PART ON ONE SIDE, EVERYTHING ELSE ON OTHER SIDE

② COMPLETE THE SQUARE ON SQUARED PART

③ FACTOR OUT THE NUMBER IN FRONT OF VARIABLE

