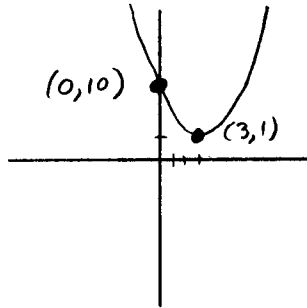
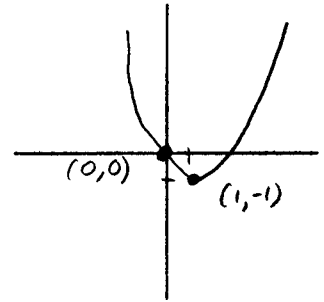


**P-20** For each parabola in the form  $y = \pm(x - A)^2 + B$ , find the vertex, the  $y$ -intercept and the direction in which the parabola opens. Make a sketch of each parabola. Check your sketch by finding the point symmetric to the  $y$ -intercept.

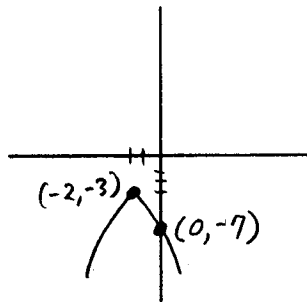
1.  $y = (x - 3)^2 + 1$



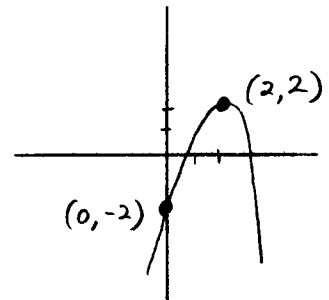
3.  $y = (x - 1)^2 - 1$



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



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



Use the distributive axiom of multiplication over addition to multiply out each expression and then collect any like terms. Express your answers in the form  $ax^2 + bx + c$ .

$$\begin{aligned} 5. \quad (x+1)(x+2) &= x^2 + 2x + 1x + 2 \\ &= x^2 + 3x + 2 \end{aligned}$$

$$\begin{aligned} 7. \quad (x-1)(x+3) &= x^2 + 3x - x - 3 \\ &= x^2 + 2x - 3 \end{aligned}$$

$$\begin{aligned} 6. \quad (x+3)^2 &= (x+3)(x+3) \\ &= x^2 + 3x + 3x + 9 \\ &= x^2 + 6x + 9 \end{aligned}$$

$$\begin{aligned} 8. \quad (x-5)^2 + 1 &= (x-5)(x-5) + 1 \\ &= x^2 - 5x - 5x + 25 + 1 \\ &= x^2 - 10x + 26 \end{aligned}$$

Translate each statement into an algebraic expression. Be sure to state what quantity each letter represents.

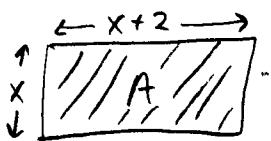
9. The area of a square table top is the square of the length of one of the sides.

let  $A$  be the area

$l$  be the length of one side

$$A = l^2$$

10. A rectangular pool table is such that one side is two feet longer than the other. The area of the pool table is the product of the lengths of the two sides.



let  $x$  be the length of the shorter side  
(so the other side has length " $x+2$ ")

let  $A$  be the area

$$A = x(x+2)$$