

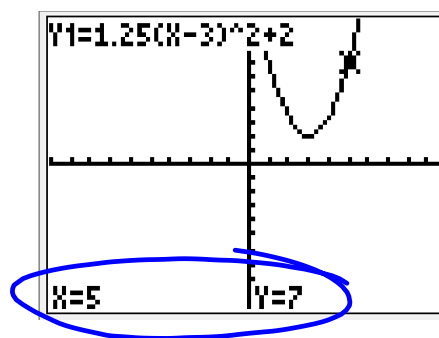
#31 p. 250  
 vertex  $(3, 2)$   $(1, 7)$   
 $h$   $k$   $x_1$   $y_1$

vertex form:  $y = a(x-h)^2 + k$   
 $y = a(x-3)^2 + 2$

plug in  $(x_1, y_1)$ :  $7 = a(1-3)^2 + 2$   
 $7 = a(-2)^2 + 2$   
 $7 = a \cdot 4 + 2$   
 $7 = 4a + 2$   
 $5 = 4a$   
 $a = 1.25$

x	y
$(-1, 7)$	
$(5, 7)$	
<del><math>(3, 7)</math></del>	
<del><math>(3, 2)</math></del>	

$(-1, 22)$



$(3, 2)$  is on  
 parabola

#32 "constant term" = -3

definition:

Standard form:  $y = ax^2 + bx + c$

$$\textcircled{A} \quad y = (3x+1)(-x-3)$$

$\underline{-1} \times \underline{-3} = \underline{-3}$

$$\textcircled{C} \quad f(x) = (x-3)(x-3)$$

$\underline{-3} \times \underline{-3} = 9$

Topic: roots of  
polynomial equations,  
including quadratic  
equations

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"root" means x-value  
that makes the equation  
true ("solves" the  
equation)

p.251  $f(x) = ?$  linear  
root @  $x=3$ ?

try:  $f(x) = x$

$$0 = x \quad ?$$

root:  $x = 0$

try:  $f(x) = x + 1$

$$0 = x + 1 \quad ?$$

root:  $x = -1$

try:  $f(x) = x - 3$

$$0 = x - 3$$

root:  $x = 3$

$$g(x) = x - 4$$

$$0 = x - 4$$

root:  $x = 4$

Q.E. with roots @ 5 and 3?

$$(x-5)(x-3) = 0$$

$$x^2 - 3x - 5x + 15 = 0$$

$$x^2 - 8x + 15 = 0$$

Topic: solving quadratic equation using square roots.

Ex.  $x^2 - 9 = 0$  (factoring)

new method:  
(square root)

key  
→

$$x^2 = 9$$

$$x = \pm \sqrt{9}$$

$$x = \pm 3$$

one method:

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

$$x+3=0 \quad x-3=0$$

$$x=-3 \quad x=3$$

$$x = \pm 3$$

Enrichment

$$x^2 - 6x + 9 = 13$$

Solve for  $x$  with square root

$$(x-3)(x-3) = 13$$

$$(x-3)^2 = 13$$

$$x-3 = \pm \sqrt{13}$$

$$x = 3 \pm \sqrt{13}$$