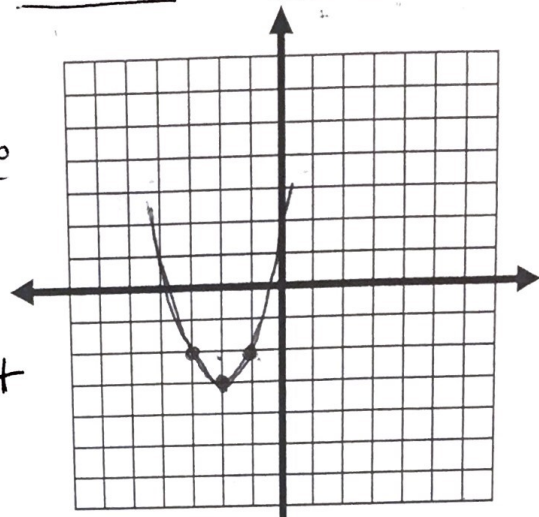


Review

1. Graph each function, describe the transformation, identify the vertex, axis of symmetry and maximum or minimum value.

$y = (x+2)^2 - 3$  VERTEX form  
 Left 2, down 3  $y = a(x-h) + k$   
 number inside  
 VERTEX  $(-2, -3)$  -R. +L  
 axis of symmetry  $x = -2$



min at  $y = -3$

$a = 1$  +

2. Graph  $y = x^2 - 4x + 5$

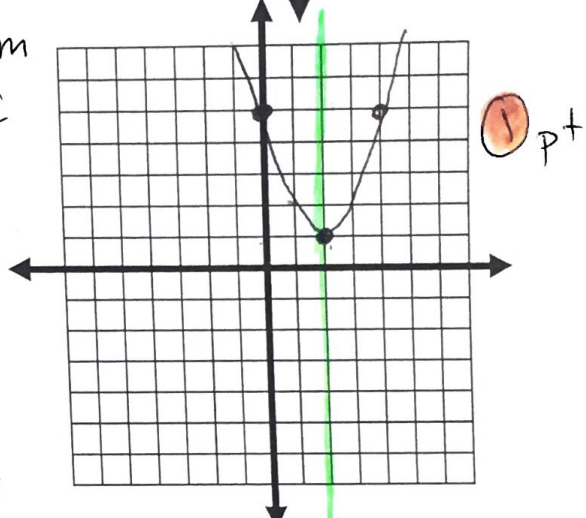
standard form  
 $y = ax^2 + bx + c$   
 $a = 1$   $b = -4$   $c = 5$

$h = -\frac{b}{2a}$  1 pt

$h = \frac{4}{2 \cdot 1} = \frac{4}{2} = 2$  1 pt

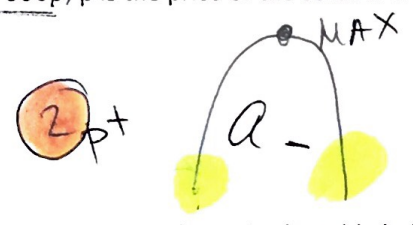
$k = 2^2 - 4 \cdot 2 + 5 = 1$  1 pt (2, 1)

y-int  $(0, c) = (0, 5)$  1 pt



3. A model for a company's revenue from selling a software package is  $R = -1.5p^2 + 600p$ ,  $p$  is the price of the software. What price would maximize revenue? What is the maximum revenue?

MENU 5  
 $p = 200$   
 $R = 60,000$



4. A player hits a tennis ball across the court and records the height of the ball at different times, as shown in the table below.

- Find a quadratic model for the data.
- Use the model to estimate the height of the ball at 4 seconds.
- What is the ball's maximum height?  $y = ?$

- $y = -2x^2 + 3x + 7$  1 pt
- $y = -2 \cdot 4^2 + 3 \cdot 4 + 7 = -13$  1 pt
- $y = 8.125$  ft 1 pt

MENU 2

Time (s)	Height (ft)
0	7
1	8
2	5

F2 CALC  
 F3 REG  
 F3  $x^2$

5. Factor the following

- $a^2 + 15a - 100$  1
- $6p^2 - 15p - 9$  1
- $2h^3 - h$  1
- $50x^2 + 40x + 8$  1

5) a)  $a^2 + 15a - 100$

leading coefficient = 1

$\begin{array}{r} | \\ | \quad | \\ | \quad | \\ | \quad | \\ + \quad -5 \\ +20 \end{array}$

$\begin{array}{r} | \cdot 100 \\ 2 \cdot 50 \\ 4 \cdot 25 \\ 5 \cdot 20 \end{array}$

$(a+20)(a-5)$

b)  $6p^2 - 15p - 9$

GCF  $\rightarrow 3(2p^2 - 5p - 3)$  "slip and slide"

$\begin{array}{r} * p^2 - 5p - 6 \\ \begin{array}{r} -6 \\ \cdot \\ +1 \end{array} \end{array}$

$\begin{array}{r} * (p+1)(p-6) \\ \begin{array}{r} \cdot \\ \cdot \\ \cdot \end{array} \end{array}$

$3(2p+1)(p-3)$

c)  $2h^3 - 2h = 2 \cdot h \cdot h \cdot h - 2 \cdot h \cdot 1$

$2h(h^2 - 1)$  difference of squares

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

$2h(h+1)(h-1)$

d)  $50x^2 + 40x + 8$

$= 2(25x^2 + 20x + 4)$

perfect square trinomial

$a^2 \pm 2ab + b^2 = (a \pm b)^2$

$\begin{array}{r} \uparrow \quad \quad \quad \uparrow \\ a = 5x \quad 2 \cdot a \cdot b \quad b = 2 \\ \quad \quad \quad 2 \cdot 5x \cdot 2 \end{array}$

$2(5x+2)^2$