10 MATH

EQUATIONS & MAPPING NOTATION ***Based on $y = x^2$***

Standard form of quadratic equation

$$y = a(x - h)^2 + k$$

Transformational form of quadratic equation

$$\frac{1}{a}(y - k) = (x - h)^2$$

State the equation from the given mapping notation

a) $(x, y) \rightarrow (x, y + 2)$

b) $(x, y) \rightarrow (x, 5y - 3)$

c) $(x, y) \rightarrow (x + 5, y)$

d) $(x, y) \rightarrow (x - 3, y - 3)$

e) $(x, y) \rightarrow (x + 2, 7y - 2)$

f) $(x, y) \rightarrow (x - 3, -\frac{1}{5}y + 7)$

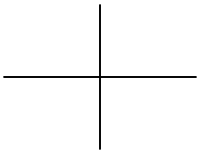
		Rearrange each of the following transformation form of the equations into standard form	What are the co-ordinates of the vertex	Write each of the following in mapping notation
a)	$2y = x^2$			
b)	$-\frac{1}{7}y = x^2$			
c)	$3(y - 5) = x^2$			
d)	$y = (x - 9)^2$			
e)	$y + 3 = (x - 1)^2$			
f)	$5(y - 3) = (x - 2)^2$			
g)	$-4(y - 7) = (x + 5)^2$			
h)	$-\frac{1}{7}(y + 5) = (x - 2)^2$			

What are the coordinates of the vertex

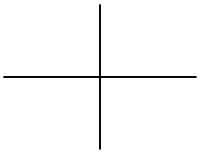
Rearrange each of the following standard form of the equations into transformational form.

Sketch the graph

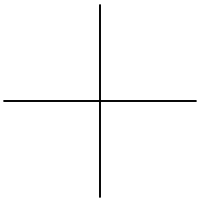
a) $\mathbf{y = -\frac{1}{5}x^2}$



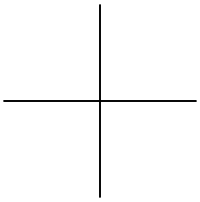
b) $y = -4x^2$



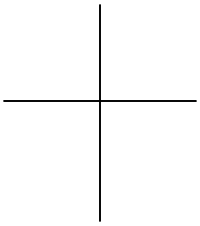
c) $\mathbf{y = (x + 5)^2}$



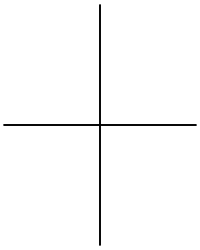
d) $\mathbf{y = -\frac{1}{2}x^2 + 1}$



e) $y = 3x^2 - 2$



f) $\mathbf{y = -7(x - 7)^2 - 4}$



SOLUTIONS

10 MATH

EQUATIONS & MAPPING NOTATION ***Based on $y = x^2$***

Standard form of quadratic equation

$$y = a(x - h)^2 + k$$

Transformational form of quadratic equation

$$\frac{1}{a}(y - k) = (x - h)^2$$

State the equation from the given mapping notation

a) $(x, y) \rightarrow (x, y + 2)$ $\quad y - 2 = x^2$

b) $(x, y) \rightarrow (x, 5y - 3)$ $\quad \frac{1}{5}(y+3) = x^2$

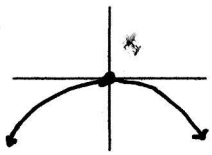
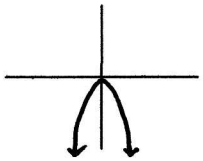
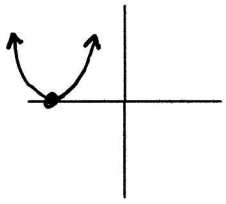
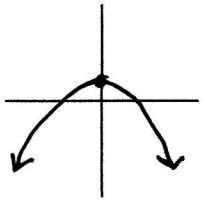
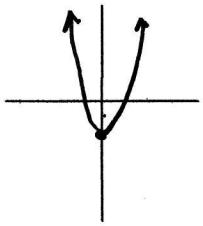
c) $(x, y) \rightarrow (x + 5, y)$ $\quad y = (x-5)^2$

d) $(x, y) \rightarrow (x - 3, y - 3)$ $\quad y+3 = (x+3)^2$

e) $(x, y) \rightarrow (x + 2, 7y - 2)$ $\quad \frac{1}{7}(y+2) = (x-2)^2$

f) $(x, y) \rightarrow (x - 3, -\frac{1}{5}y + 7)$ $\quad -5(y-7) = (x+3)^2$

		Rearrange each of the following transformation form of the equations into standard form	What are the co-ordinates of the vertex	Write each of the following in mapping notation
a)	$2y = x^2$	$y = \frac{1}{2}x^2$	$(0, 0)$	$(x,y) \rightarrow (x, \frac{1}{2}y)$
b)	$-\frac{1}{7}y = x^2$	$y = -7x^2$	$(0, 0)$	$(x,y) \rightarrow (x, -7y)$
c)	$3(y - 5) = x^2$	$y = \frac{1}{3}x^2 + 5$	$(0, 5)$	$(x,y) \rightarrow (x, \frac{1}{3}y + 5)$
d)	$y = (x - 9)^2$	$y = (x-9)^2$	$(9, 0)$	$(x,y) \rightarrow (x + 9, y)$
e)	$y + 3 = (x - 1)^2$	$y = (x-1)^2 - 3$	$(1, -3)$	$(x,y) \rightarrow (x + 1, y - 3)$
f)	$5(y - 3) = (x - 2)^2$	$y = \frac{1}{5}(x-2)^2 + 3$	$(2, 3)$	$(x,y) \rightarrow (x + 2, \frac{1}{5}y + 3)$
g)	$-4(y - 7) = (x + 5)^2$	$y = -\frac{1}{4}(x+5)^2 + 7$	$(-5, 7)$	$(x,y) \rightarrow (x - 5, -\frac{1}{4}y + 7)$
h)	$-\frac{1}{7}(y + 5) = (x - 2)^2$	$y = -7(x-2)^2 - 5$	$(2, -5)$	$(x,y) \rightarrow (x + 2, -7y - 5)$

What are the coordinates of the vertex	Rearrange each of the following standard form of the equations into transformational form.	Sketch the graph
$(0, 0)$	$-5y = x^2$	
$(0, 0)$	$-\frac{1}{4}y = x^2$	
$(-5, 0)$	$y = (x+5)^2$	
$(0, 1)$	$-2(y-1) = x^2$	
$(0, -2)$	$\frac{1}{3}(y+2) = x^2$	
$(7, -4)$	$-\frac{1}{7}(y+4) = (x-7)^2$