a) Write the function $g(x) = -2x^2 + 4x + 30$ in vertex form.

b) Give the coordinates of the vertex and the equation of the axis of symmetry.

c) Describe the transformations from $f(x) = x^2$ to g.

d) Graph the function.

e) Find the zeros.

vertex (1, 32)
a.o.s. $x = 1$

$g(x) = -2x^2 + 4x + 30$

$g(x) - 30 = -2x^2 + 4x$

$g(x) - 30 - 2 = -2(x^2 - 2x + 1)$

$\frac{1}{2}(-2) = -1$

$(-1)^2 = 1$

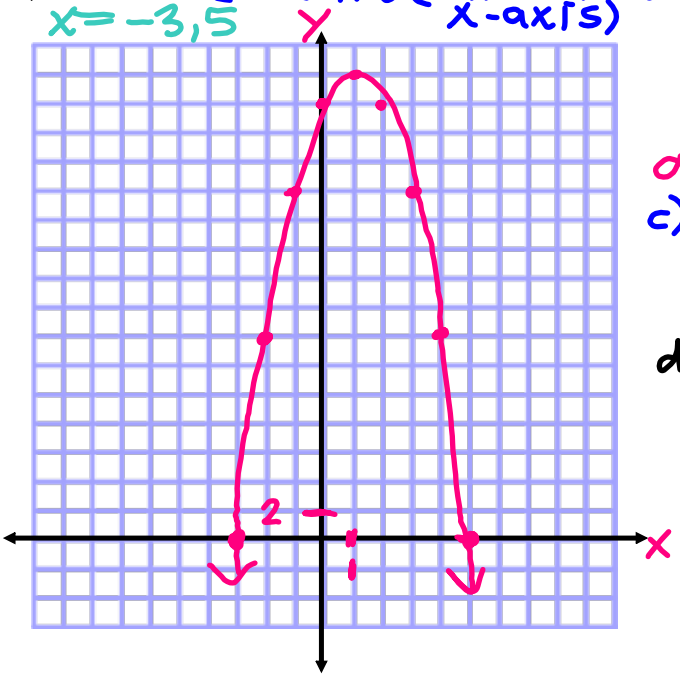
$g(x) - 32 = -2(x-1)^2$
$+32 \qquad +32$

a) $g(x) = -2(x-1)^2 + 32$

c) vert. reflection over x-axis
vert. stretch by a factor of 2
hor. translation right 1 unit
vert. translation up 32 units

e) ← x-int (where it crosses x-axis)

$x = -3, 5$



d)

x		y
-1	$-2(-1-1)^2 + 32$	24
0	$-2(0-1)^2 + 32$	30
1		32
2	$-2(2-1)^2 + 32$	30
3	$-2(3-1)^2 + 32$	24
4		14
5		0

a) Write the function $g(x) = -2x^2 + 4x + 6$ in vertex form.

b) Give the coordinates of the vertex and the equation of the axis of symmetry.

c) Describe the transformations from $f(x) = x^2$ to g.

d) Graph the function.

e) Find the zeros.

$g(x) = -2x^2 + 4x + 6$

$g(x) - 6 = -2x^2 + 4x$

$g(x) - 6 - 2 = -2(x^2 - 2x + 1)$

$\frac{1}{2}(-2) = -1$

$(-1)^2 = 1$

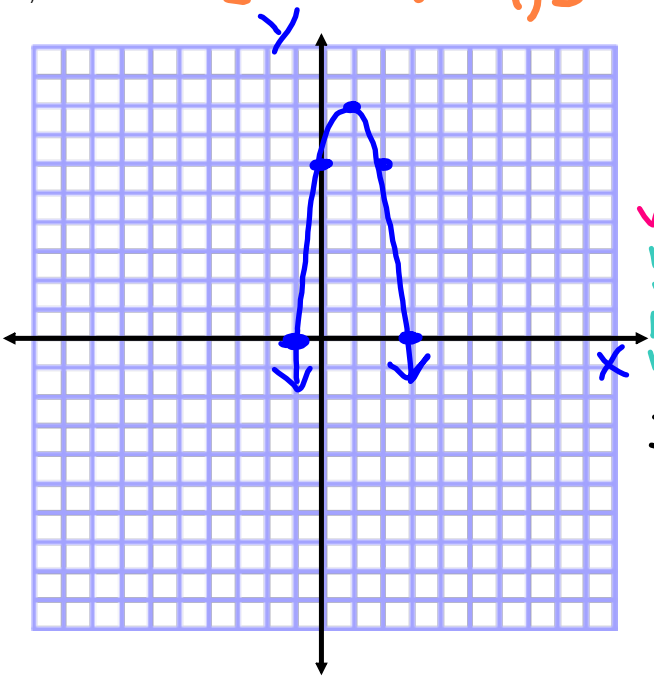
$g(x) - 8 = -2(x-1)^2$

$g(x) = -2(x-1)^2 + 8$

vertex (1, 8) a.o.s. $x = 1$

vert. reflection over x-axis
vert. stretch by a factor of 2
hor. translation 1 unit right
vert. translation 8 units up

Zeros: $x = -1, 3$



x		y
-1	$-2(-1-1)^2 + 8$	0
0	$-2(0-1)^2 + 8$	6
1		8
2	$-2(2-1)^2 + 8$	6
3	$-2(3-1)^2 + 8$	0