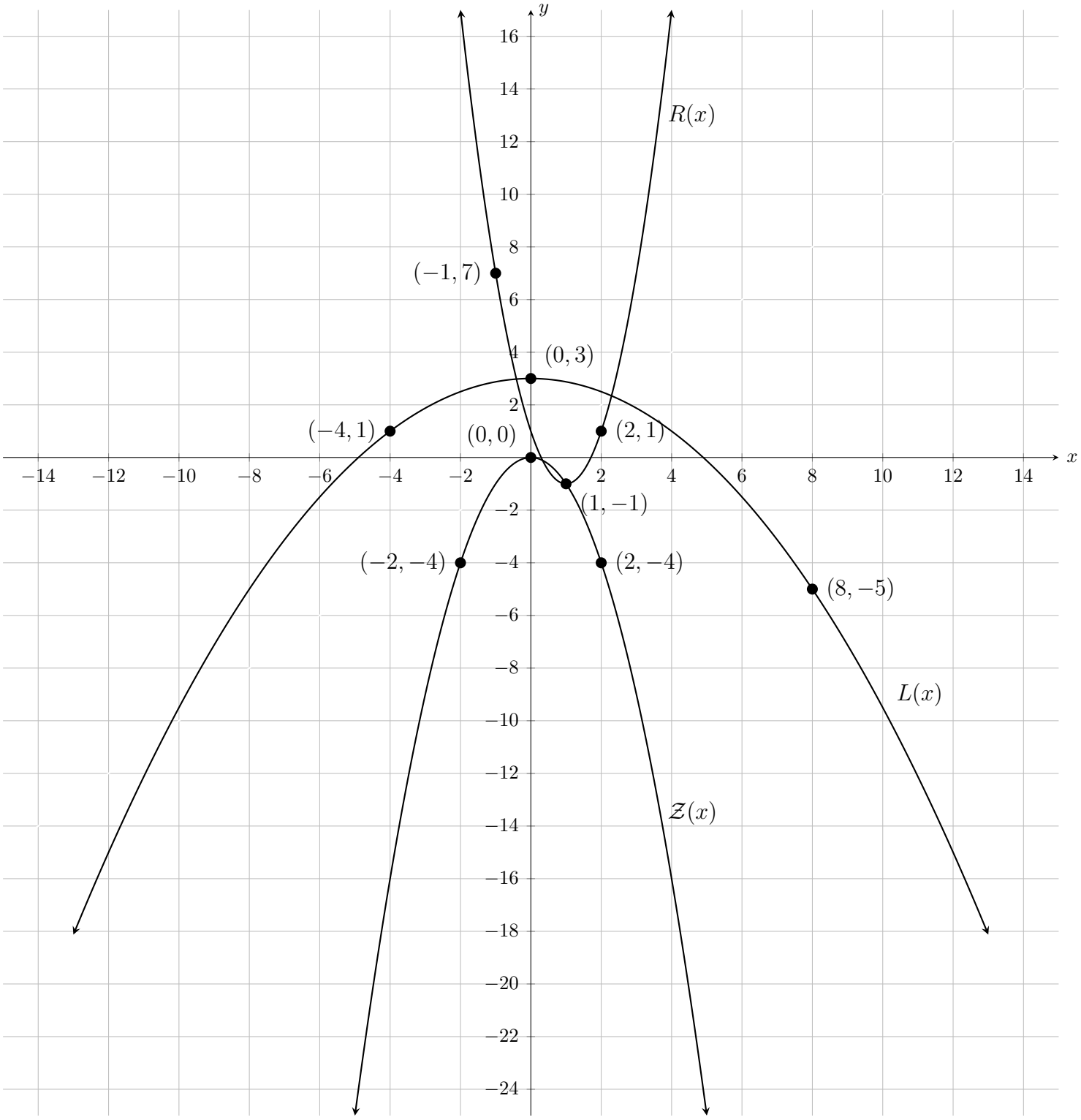
Solutions - Lecture 5 - Homework

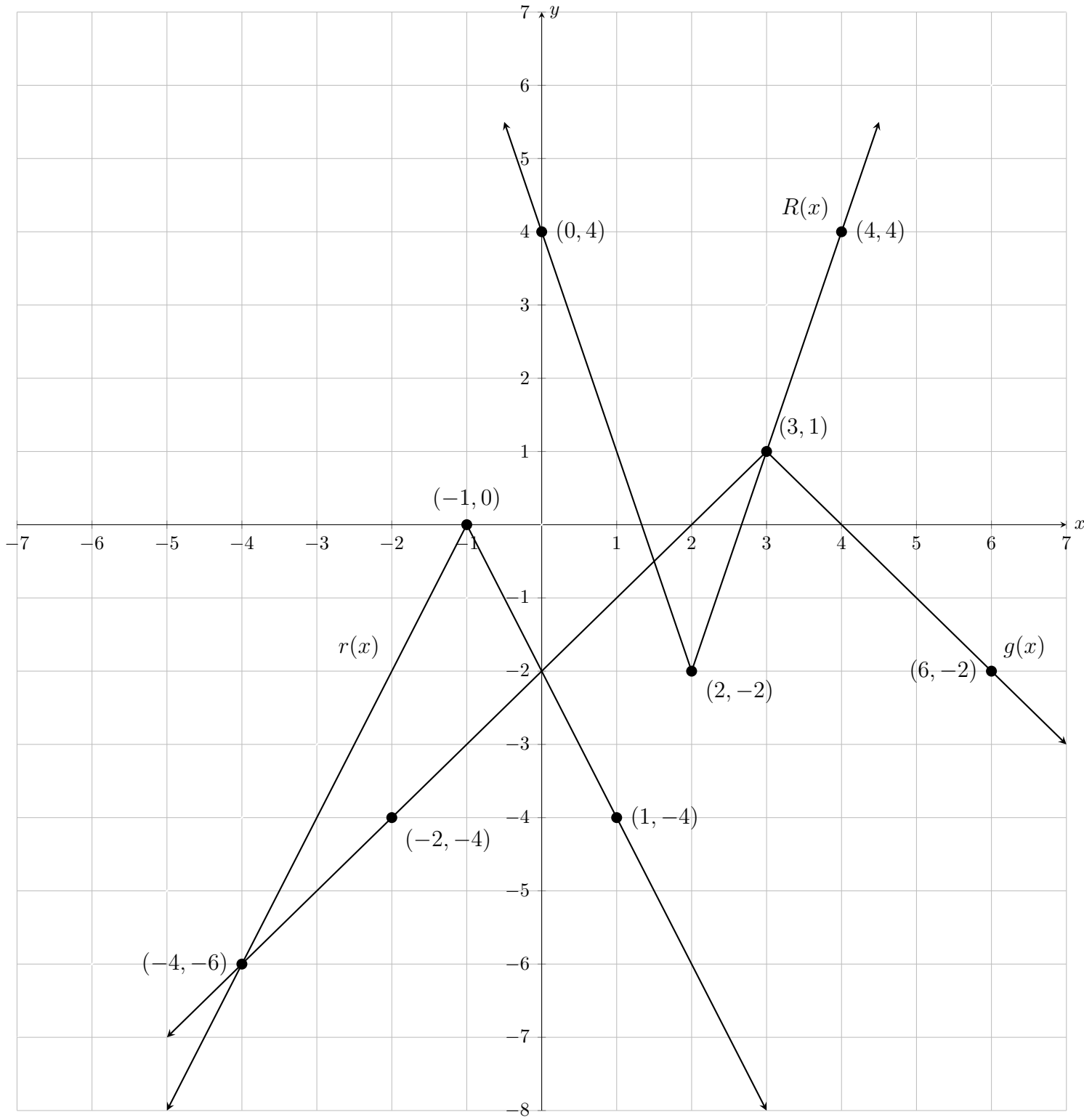
Question 1.

Solution. Legend : $\mathcal{Z}(x) = -f(-x)$, $L(x) = -2f(\frac{1}{4}x) + 3$, $R(x) = \frac{1}{2}f(-2(x-1)) - 1$



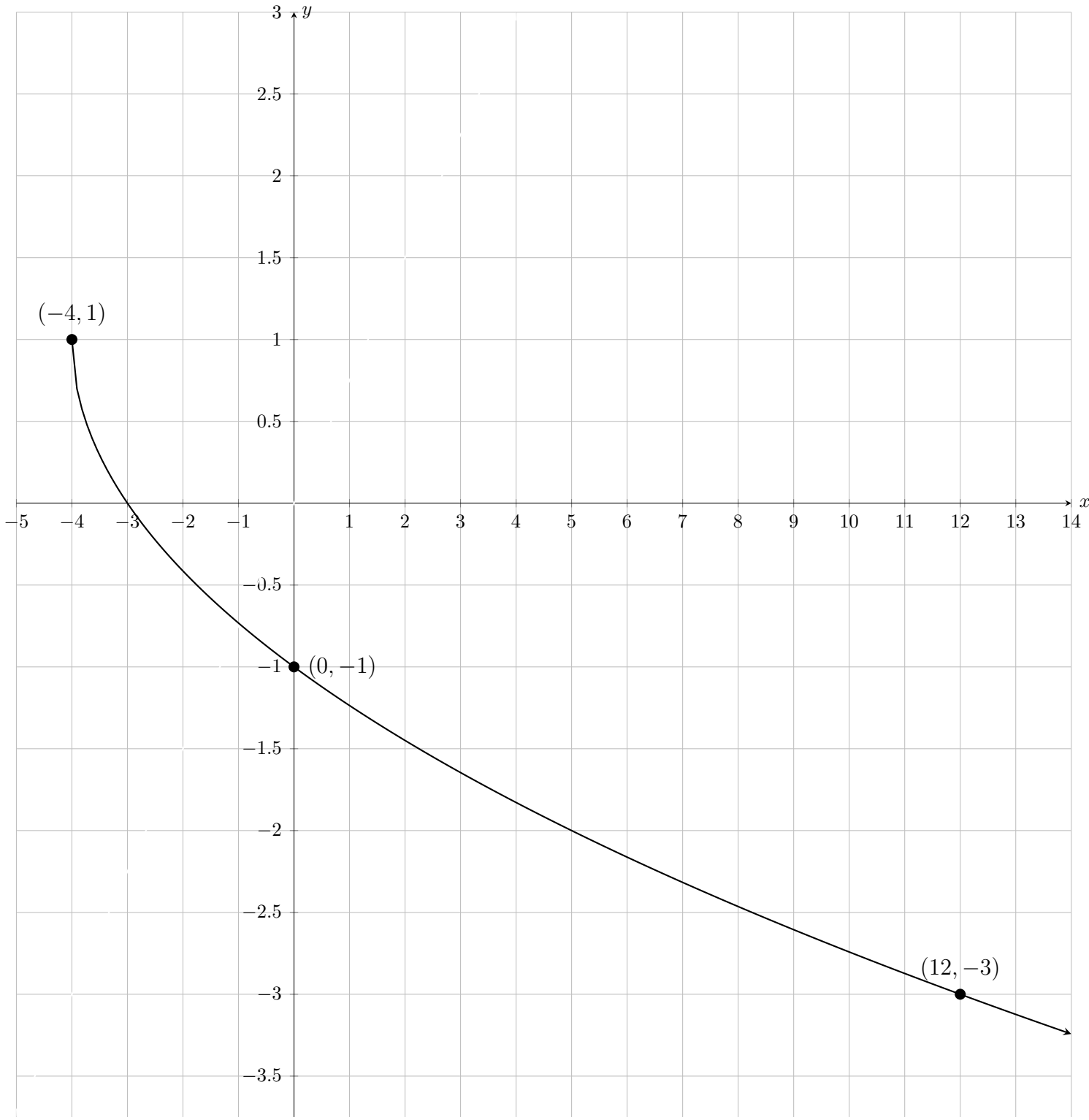
Question 2.

Solution. Legend : $r(x) = -2f(x+1)$, $g(x) = -f(x-3)+1$, $R(x) = \frac{3}{2}f(-2x+4)-2$



Question 3.

Solution. Legend : $g(x) = -\frac{1}{2}f(4(x+4)) + 1$.



Question 4.

Solution.

(a) $f(x) = -\frac{2}{3}(3x-6)^2-1 = -\frac{2}{3}(3(x-2))^2-1$. The parent function here is x^2. The transformations,

- Reflection on the x-axis.
- Vertical compression by a factor of $\frac{3}{2}$.
- Horizontal compression by a factor of 3.
- Horizontal shift, right 2 units.
- Vertical shift, down 1 unit.

(b) $g(x) = 3\sqrt{-4x+12}+9 = 3\sqrt{-4(x-3)}+9$. The parent function here is $\sqrt{x}$.
The transformations are,

- Vertical stretch by a factor of 3.
- Reflection on the y-axis.
- Horizontal compression by a factor of 4.
- Horizontal shift, right 3 units.
- Vertical shift, up 9 units.

(c) $h(x) = -4\left|\frac{1}{2}x+1\right| = -4\left|\frac{1}{2}(x+2)\right|$. The parent function here is $|x|$. The transformations are,

- Reflection on the x-axis.
- Vertical stretch by a factor of 4.
- Horizontal stretch by a factor 2.
- Horizontal shift, left 2 units.

Question 5.

Solution.

(Q4.)	a) II	b) IV	c) I	d) III
(Q61.)	a) 3	b) 1	c) 2	d) 4
(Q61.)	a) 2	b) 3	c) 1	d) 4