Laboratory work #2 | 2D animation basics

Objectives

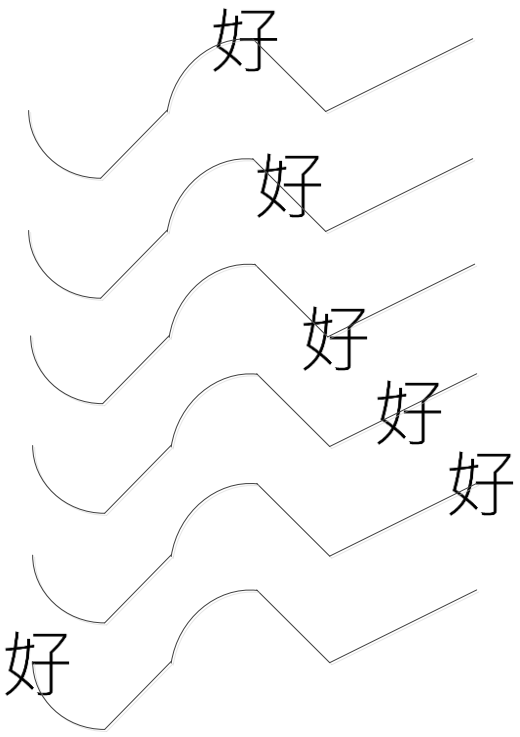
As a result of this laboratory work you will know how 2D coordinate system used to draw simple images, and how to compose an image based on trivial drawing operations.

Instructions

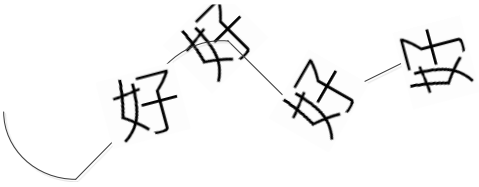
1. Modify your program from Lab #1 so that each kanjis displayed down below the previous one, like this:

   你
   好

2. Animate each kanji so that it moves from the left to the right following the line defined by the piecewise-defined function. Use different line for each kanji. Line itself shouldn't be displayed.



3. Choose two of moving kanji. Change the animation for them to rotate in a different directions. One rotating clockwise and another rotating counter-clockwise.



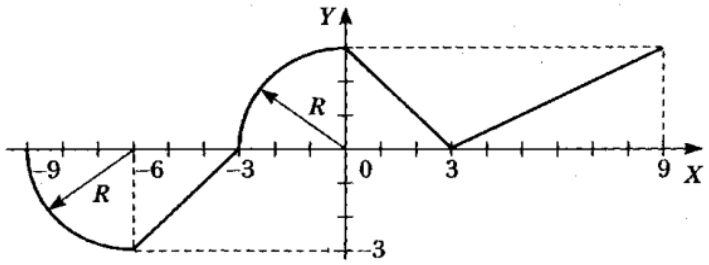
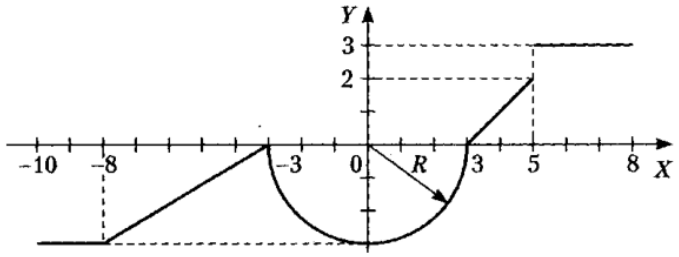
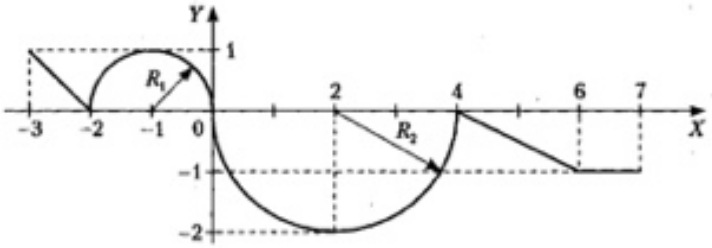
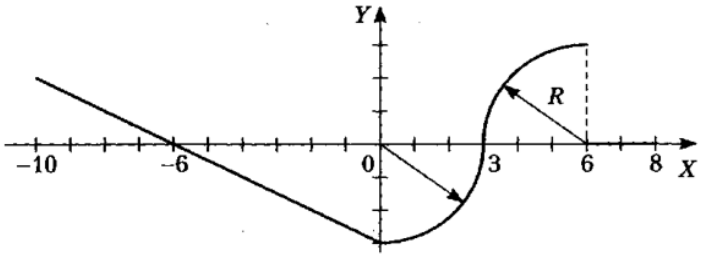
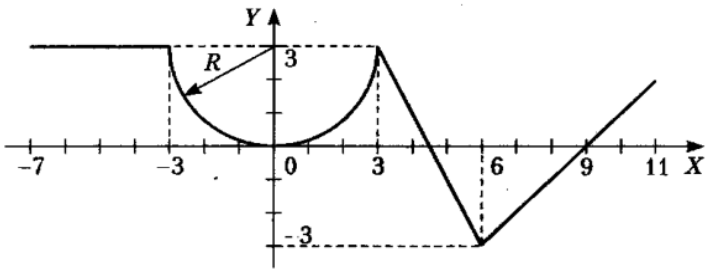
The final solution should look like a column of kanji, each moving according to its own trajectory. Any two of them rotating at the same time.

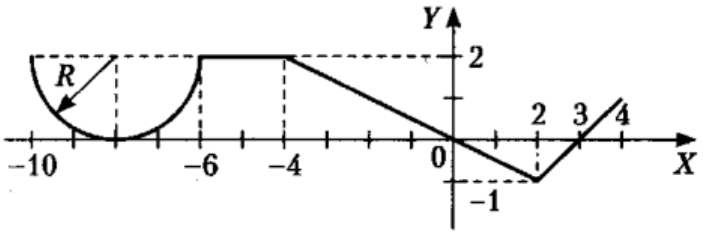
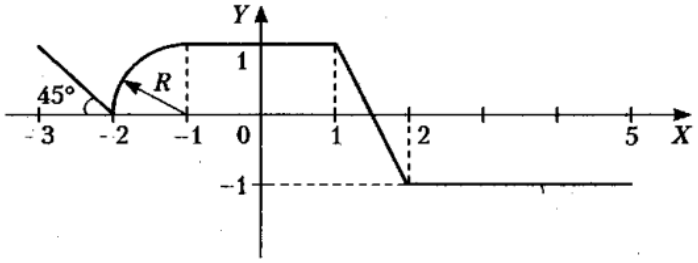
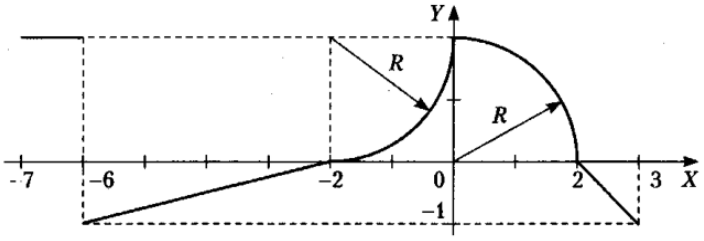
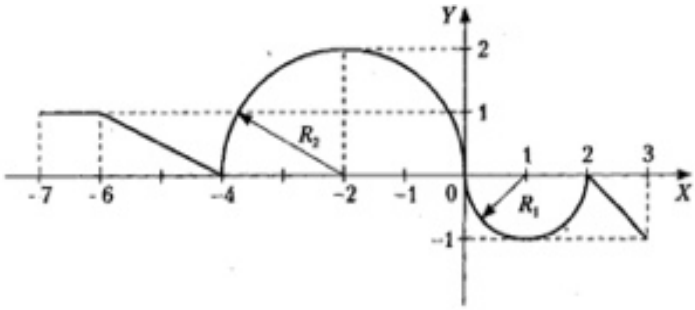
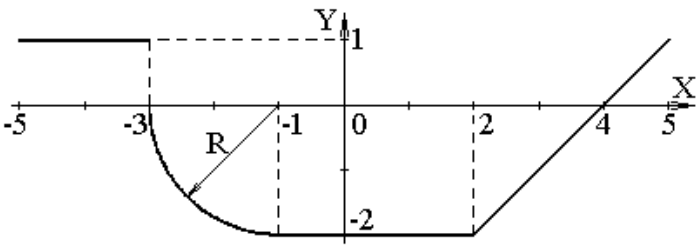
Variants

Select a number piecewise-defined functions according to the variants table. Each variant contains a few numbers. Each number corresponds to piecewise-defined function giving a shape of line for the next of your kanji.

For example, variant "1,7,5" means: use function number 1 to get the line guiding the first kanji, use function number 7 to get the line guiding the second kanji, use function number 5 to get the line guiding the third kanji.

Branching: Piecewise-defined function – Variants

		Range	Function f(x)
1		$-9 \le x < -6$	$y = -\sqrt{9-(x+6)^2}$
		$-6 \le x \le -3$	$y = x + 3$
		$-3 < x < 0$	$y = \sqrt{9-x^2}$
		$0 \le x \le 3$	$y = -x + 3$
		$x > 3$	$y = 0.5 * x - 1.5$
		Range	**Function f(x)**
2		$-10 \le x < -8$	$y = -3$
		$-8 \le x \le -3$	$y = 0.6 * x + 1.8$
		$-3 < x < 3$	$y = -\sqrt{9-x^2}$
		$3 \le x \le 5$	$y = x - 3$
		$5 < x \le 8$	$y = 3$
		Range	**Function f(x)**
3		$-3 \le x \le -2$	$y = -x - 2$
		$-2 < x < 0$	$y = \sqrt{1-(x+1)^2}$
		$0 \le x \le 4$	$y = -\sqrt{4-(x-2)^2}$
		$4 < x \le 6$	$y = -0.5 * x + 2$
		$6 < x \le 7$	$y = -1$
		Range	**Function f(x)**
4		$-10 \le x \le 0$	$y = -0.3 * x - 3$
		$0 < x < 3$	$y = -\sqrt{9-x^2}$
		$3 \le x \le 6$	$y = \sqrt{9-(x-6)^2}$
		Range	**Function f(x)**
5		$-7 < x \le -3$	$y = 3$
		$-3 < x \le 3$	$y = \sqrt{9-x^2} + 3$
		$3 < x \le 6$	$y = -1.5 * x + 7.5$
		$6 < x \le 9$	$y = x - 3$

		Range	Function f(x)
6		$-10 < x \leq -6$	$y = \sqrt{(x+8)^2} + 2$
		$-6 < x \leq -4$	$y = 2$
		$-4 < x \leq 2$	$y = -0.5 * x$
		$2 < x \leq 4$	$y = x - 3$
7		Range	Function f(x)
		$-3 < x \leq -2$	$y = -x - 2$
		$-2 < x \leq -1$	$y = \sqrt{1-(x+1)^2}$
		$-1 < x \leq 1$	$y = 1$
		$1 < x \leq 2$	$y = -2 * x + 3$
		$2 < x \leq 5$	$y = -1$
8		Range	Function f(x)
		$-7 \leq x \leq -6$	$y = 2$
		$-6 < x \leq -2$	$y = 0.25 * x + 0.5$
		$-2 < x \leq 0$	$y = -\sqrt{4-(x+2)^2} + 2$
		$0 < x \leq 2$	$y = \sqrt{4-x^2}$
		$2 \leq x \leq 3$	$y = -x + 2$
9		Range	Function f(x)
		$-7 \leq x \leq -6$	$y = 1$
		$-6 < x \leq -4$	$y = -0.5 * x - 2$
		$-4 < x < 0$	$y = \sqrt{4-(x+4)^2}$
		$0 \leq x \leq 2$	$y = -\sqrt{1-(x-1)^2}$
		$2 < x \leq 3$	$y = -x + 2$
10		Range	Function f(x)
		$-5 \leq x \leq -3$	$y = 1$
		$-3 < x \leq -1$	$y = -\sqrt{4-(x+1)^2}$
		$-1 < x \leq 2$	$y = -2$
		$2 \leq x \leq 5$	$y = x - 4$