; Introduction to big-bang Animations, Part I
; =============================================

; From
; • an initial image, and
; • a unary function with contract image -> image,
; big-bang can animate the sequence of images starting with the
; initial image and repeatedly calling the function to generate
; successive images.

(require picturing-programs)

; EXERCISE: list the functions you've seen that have the contract
; image -> image.

; The function rotate has contract: number image -> image.
; Let's make a function that rotates an image by 35 degrees.

; rotate-35 : image -> image
; rotate an-image by 35 degrees counter-clockwise
(define (rotate-35 an-image)
  (rotate 35 an-image))

; If we give and rotate-35 to big-bang, it will make
; an animation by doing the following and displaying the results
; one at a time in a new window:

"Manually exploring four frames of a potential animation:"
"Starting the big-bang animation."
; Here's the big-bang expression to do it:

;;; The big-bang operation is special: it doesn't follow our normal
;;; evaluation rules. In particular, on-tick and to-draw don't mean
;;; anything outside of big-bang. And there's no intermediate step,
;;; e.g., where you can replace (on-tick rotate-35 1/2) with a value.

;;; Use it for now by filling in the three parts shown here as ___:
;;; (big-bang ___
;;;     (on-tick ___ ___)
;;;     (to-draw show-it))

;;; The first part is an image, the second part is a function with
;;; contract image -> image, and the third part is a number (for
;;; how many seconds to wait between images).

;;; When you run this file you'll see four images in the Interactions
;;; from our manual exploration of repeatedly using rotate-35 on

; and so on ....

; (rotate-35 (rotate-35 (rotate-35 (rotate-35 ...))))

; (rotate-35 (rotate-35 (rotate-35 (rotate-35 (rotate-35 ...) ...))))
; When you close that window, the last frame of the animation will
; show in the Interactions.

"That was the last frame of the animation when you stopped it."

; EXERCISE: change the initial image in the big-bang expression
; and run it again.
; EXERCISE: change the time delay in the big-bang expression
; and run it again.
; EXERCISE: change the definition of rotate-35 to rotate by just
; 1 degree, and run the big-bang expression again.

; The course videos address the clunkiness of rotation in the
; rectangular image. We're not too concerned about that now.