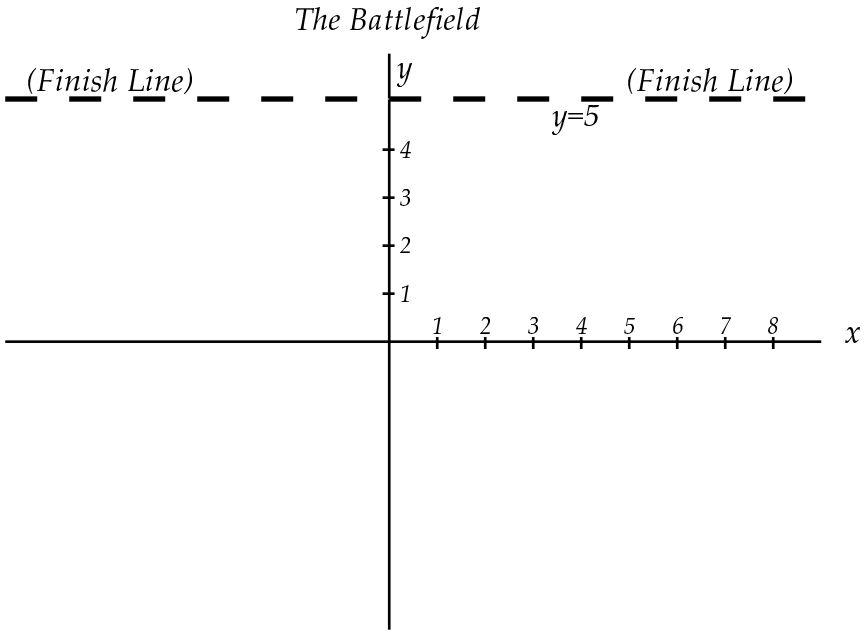
10: (10 pts) The newest FOX reality show, "BattleBugs: Clash of the Beetles" begins (at $t = 0$) with eight assorted insects placed randomly on a large mat (the "battlefield", pictured below), on which is marked a "finish line." The producers hoped that the bugs would battle to be first to cross the finish line, but instead they just wander around, each according to its nature. The motion of each bug is described by the equations below. Both x and y are measured in inches.



Hercules Beetle $x(t) = \cos(t/2)$ $y(t) = \sin(t/2)$	Ladybug $x(t) = e^{-t}$ $y(t) = e^{-2t}$	Tiger Beetle $x(t) = 1 + t$ $y(t) = -1 + 8t$	Longhorned Beetle $x(t) = 3 + t$ $y(t) = 4 - t$
Dung Beetle $x(t) = t$ $y(t) = -2$	Scarab $x(t) = 2 - 7t$ $y(t) = -1 - 7t$	June Beetle $x(t) = 0$ $y(t) = -1$	African Ground Beetle $x(t) = \sin(t)$ $y(t) = \cos(t)$

Which bug (or bugs) . . .

a. move repetitively?

b. move fastest?

c. begin closest to the finish line?

d. will reach the finish line first?

e. will move very slowly (or not at all), in the long run?