49. Reading carefully, we see that the (x, y) specifications for each "dart" are to be interpreted as $(\Delta x, \Delta y)$ descriptions of the corresponding displacement vectors. We combine the different parts of this problem into a single exposition. Thus, along the x axis, we have (with the centimeter unit understood)

$$30.0 + b_x - 20.0 - 80.0 = -140.0 \quad ,$$

and along y axis we have

$$40.0 - 70.0 + c_y - 70.0 = -20.0 \quad .$$

Hence, we find $b_x = -70.0$ cm and $c_y = 80.0$ cm. And we convert the final location $(-140, -20)$ into polar coordinates and obtain $(141 \angle -172^\circ)$, an operation quickly done using a vector capable calculator in polar mode. Thus, the ant is 141 cm from where it started at an angle of -172°, which means 172° clockwise from the $+x$ axis or 188° counterclockwise from the $+x$ axis.