The PAR Process

Draft → Reflect → Exchange Feedback → Revise → Submit

(At Home)   (At Home)   (Thursday Discussion)   (At Home)   (Friday Class)

Note: Your PAR (both initial and final drafts) must be typed in LATEX.

Problem Statement

An ant queen, known affectionately as Aunty Ant, is commissioning a construction assessment for a new tunnel. Aunty Ant's worker ants only know one way to construct a tunnel: they grab some dirt in their pincers, walk the dirt out of the tunnel, deposit it, and then return to grab more dirt.

Prepare a report which uses differential equations to address the following construction scenarios. Include a description of how you modeled the scenario and a graph of tunnel-length vs. worktime. Also make sure to define any variables and constants you are using.

1. One tireless worker is assigned dig the tunnel. The worker walks the same speed whether she is carrying dirt or not.

2. One tireless worker is assigned to dig the tunnel, but she can walk twice as fast when she is not carrying dirt as when she is carrying dirt.

3. Aunty Ant really wants the tunnel to progress linearly after the first day of construction (that is, the graph of tunnel-depth vs. time after the first day should be a straight line). She will give you full control over how many workers are devoted to the tunnel at any given time.

4. (Optional) A single ant is assigned to dig the tunnel, but she gets fatigued the farther she walks. Her speed after walking a total distance of k units is $1/k$.
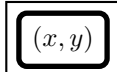
Reflection

Turn the page and check off the icons for things you think you did well; circle the icons for things you would like feedback on.

Suggestions   Communication   **Strengths**
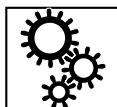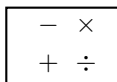
Show All Steps

Explain Why,
Not Just What

Avoid Pronouns

Use Correct
Definitions

Define Variables,
Units, etc.

Create Diagrams

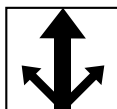**Suggestions**   Accuracy   **Strengths**

Correct Setup

Accurate Calculations

Solve Multiple Ways

Answer Reasonable

Other
(Write Below)