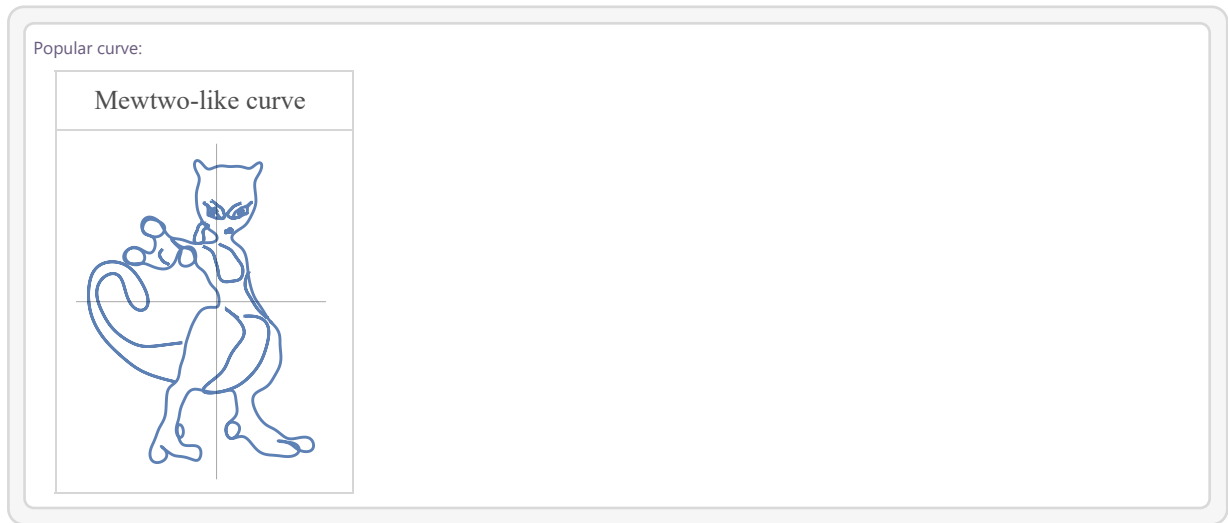


## Pokémath: Homework 6



### Pokémon® Problems

- 1) A young Pokémon® Lad is just starting his Pokemon journey. He has 5 Pokeballs and wants to catch a **level 5 Charmander** to start off the game. He will have no “boosts” beyond  $P(\text{Normal Capture})$ .
  - a) What is  $P(\text{Normal Capture})$  for a level 5 Charmander?
  - b) What is the probability that the Lad **doesn't** catch the Charmander in 5 attempts?
  - c) What is the probability that the Lad **does** catch the Charmander in 5 attempts?
- 2) The Pokémon® Professor has just defeated a Mewtwo in a non-weather boosted raid. She is going to attempt to capture it. Let's take a look at her chances of success given different capturing strategies. You check your Pokedex and find the **base capture rate for Mewtwo is .02**, or 2%, and that the Mewtwo is level 20, giving it a **CPM of .5974**.
  - a) Compute the Normal Capture Probability,  $P(\text{Normal Capture})$ , for Mewtwo.
  - b) Pokemon love eating berries. What is  $P(\text{Catch})$  if the Professor feeds the Mewtwo a Golden Razz Berry?

c) Golden Razz Berries are rare. What is  $P(\text{Catch})$  if the Professor doesn't use any berries, and decides to throw an Ultra Ball instead?

d) Compare the  $P(\text{Catch})$  from part b and c. *Open-ended question:* When you're playing Pokemon GO, when do you think it is worth it to use an Ultra Ball? When is it worth it to use a Golden Razz Berry? What about both?

3) The Professor is working on her throws. She has a probability of .4 of hitting an excellent throw where the multiplier is 1.8; call this event **E**. The event that Mewtwo is caught will be called **C**. Assume the Professor uses both an Ultra Ball and a Golden Razz Berry when trying to catch Mewtwo.

a) Write the set notation (using E and C) and find the probability that the Professor catches Mewtwo **given** that she hits the excellent curveball.

b) Write the notation and give the probability that the Professor catches Mewtwo **and** hits the excellent curveball.

c) Your answers to parts a and b should be different. Why?