Name: _____ **Date:** _____

Lesson 11 Assessment

1. Consider the function $g(x) = \dfrac{2x - 4}{x + 5}$

   a) What is the domain? _____

   b) Give the ***equation*** of the vertical asymptote for $g(x)$. _____

   c) Give the ***equation*** of the horizontal asymptote for $g(x)$. _____

   d) What is the vertical intercept? _____

   What is the horizontal intercept? _____

   e) For what value of x is $g(x) = 3$? Show your work.

   f) Determine $g(42)$. Show your work. Round your answer to three decimal places.

2. You and your family are driving to Santa Fe, NM on a road trip. From Phoenix, the trip is 526 miles according to Google. Answer the following questions based upon this situation. Round to the nearest tenth as needed.

   a) Use the relationship, Distance = Rate times Time or $d = rT$, to write a rational function $T(r)$ that has the average rate of travel, r (in mph), as its input and the time of travel (in hours) as its output. The distance will be constant at 526 miles.

   b) If you average 55 mph, how long will the trip take?

   c) If the trip took 12 hours, what was your average rate of travel?

   d) Determine the vertical intercept of $T(r)$ and interpret its meaning. If the vertical intercept does not exist, explain why (in the context of the story).

   e) Determine the horizontal intercept of $T(r)$ and interpret its meaning. If the horizontal intercept does not exist, explain why (in the context of the story).

   f) Give the *equation* of the vertical asymptote of $T(r)$, and write a sentence explaining its significance in this situation.

   g) Give the *equation* of the horizontal asymptote of $T(r)$, and write a sentence explaining its significance in this situation.