8-2 Standardized Test Prep

The Reciprocal Function Family

Multiple Choice

For Exercises 1–3, choose the correct letter.

1. What is an equation for the translation of $y = -\frac{4.5}{x}$ that has asymptotes at $x = 3$ and $y = -5$?

   A $y = -\dfrac{4.5}{x - 3} - 5$

   C $y = -\dfrac{4.5}{x - 5} + 3$

   B $y = -\dfrac{4.5}{x + 3} - 5$

   D $y = -\dfrac{4.5}{x + 5} + 3$

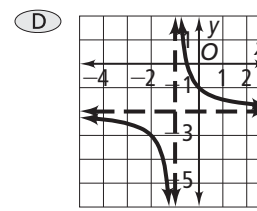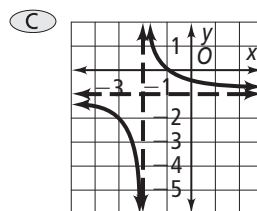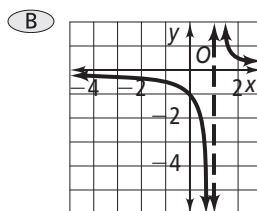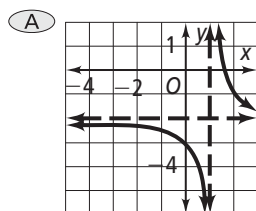2. What is the equation of the vertical asymptote of $y = \dfrac{2}{x - 5}$?

   F $x = -5$ 　　 G $x = 0$ 　　 H $x = 2$ 　　 I $x = 5$

3. Which is the graph of $y = \dfrac{1}{x + 1} - 2$?

   A 　 B 　 C 　 D

Extended Response

4. A race pilot's average rate of speed over a 720-mi course is inversely proportional to the time in minutes t the pilot takes to fly a complete race course. The pilot's final score s is the average speed minus any penalty points p earned.
   a. Write a function to model the pilot's score for a given t and p. (*Hint: $d = rt$*)
   b. Graph the function for a pilot who has 2 penalty points.
   c. What is the maximum time a pilot with 2 penalty points can take to finish the course and still earn a score of at least 3?