Class Drill 9c: Rate of Change Problem (Rational Function with Horizontal Asymptote)

Bob wrote an i-Phone Calculus app. The sales of the app are modeled by the function

$$S(t) = \frac{240t^2}{t^2 + 36}$$

In this function, t is a variable representing time in months since the app was introduced.
$S(t)$ is the total number of apps (in thousands) that have been sold at time t.

(A) Find $S(6)$. (exact answer)

(B) Find $S'(6)$. (exact answer)

(C) Interpret the results of (A) & (B). (Refer to textbook example 6 on page 230 with similar question.)

(D) Use the results of (A) and (B) to estimate the total sales after 7 months. (exact answer)

(E) Find the actual value of the total sales after 7 months. (exact answer then approximate answer)

(F) How many apps can Bob hope to eventually sell? (exact answer)

(G) Illustrate the answers to (A), (B), (D), (E), (F) using the graph below