

Limits and an Introduction to Calculus Answers

1.
 - a. $y = -0.523x^3 + 4.87x^2 + 14.0x + 10$
 - b. *Sample answer:* 30 and -25
 - c. *Sample answer:* year 5; The profit is increasing.
 - d. $y' = -1.569x^2 + 9.74x + 14$; $y'(4) = 28.856$, $y'(9) = -25.429$
 - e. $-\infty$; As time increases, the profits will eventually decrease without bound; no;
Sample answer: The model only represents the first 10 years
2.
 - a. *Sample answer:* rational functions, linear functions, inverse tangent functions
 - b. *Sample answer:* $f(x) = \frac{100x + 10}{x}$
 - c. *Sample answer:* $f(x) = \frac{11x^2 - 10}{10x}$
3.
 - a. About \$1,115,800
 - b. About \$1,159,700
 - c. b; The total profit is \$1,170,000