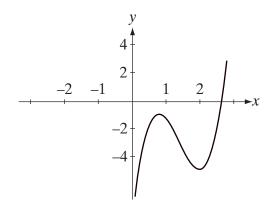
- 42. Let *g* be the function defined by  $g(x) = \int_3^x ((5+4t-t^2)(2^{-t})) dt$ . Which of the following statements about *g* must be true?
  - I. g is increasing on (3,5).
  - II. g is increasing on (5,7).
  - III. g(7) < 0
  - (A) I only
  - (B) II only
  - (C) III only
  - (D) I and III only
  - (E) I, II, and III

Answer

- 43. A region R is enclosed by the coordinate axes and the graph of  $y = k(x-5)^2$ , k > 0. When this region is revolved around the *x*-axis, the solid formed has a volume of  $2500\pi$  cubic units. What is the value of k?
  - (A) 60
- (B)  $2\sqrt{15}$
- (C) 4
- (D)  $\sqrt{5}$
- (E) 2

Answer



44. The graph above shows a function f with a relative minimum at x = 2. The approximation of f(x) near x = 2 using a second-degree Taylor polynomial centered about x = 2 is given by  $a + b(x - 2) + c(x - 2)^2$ .

Which of the following is true about a, b, and c?

- (A) a < 0, b = 0, c > 0
- (B) a > 0, b = 0, c < 0
- (C) a < 0, b < 0, c < 0
- (D) a < 0, b > 0, c > 0
- (E) a > 0, b = 0, c > 0

Answer

- (A) -2.98
- (B) -3.00
- (C) -3.08
- (D) -3.25
- (E) -3.35

Answer