

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 2500π cubic units. What is the value of k ?

(A) 60

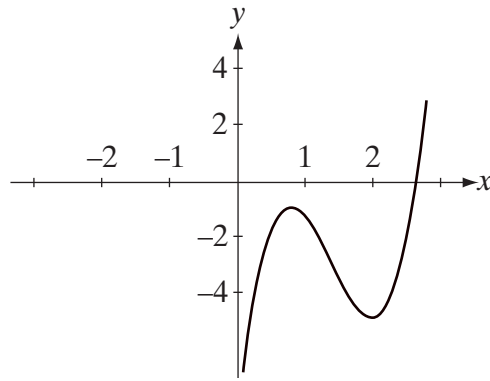
(B) $2\sqrt{15}$

(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

45. The solution of the differential equation $\frac{dy}{dx} = -\frac{x^2}{y}$ contains the point $(3, -2)$. Using Euler's method with $\Delta x = -0.3$, what is the approximate value of y when $x = 2.7$?
- (A) -2.98
 - (B) -3.00
 - (C) -3.08
 - (D) -3.25
 - (E) -3.35

Answer
