

Chapter 3 practice test answers

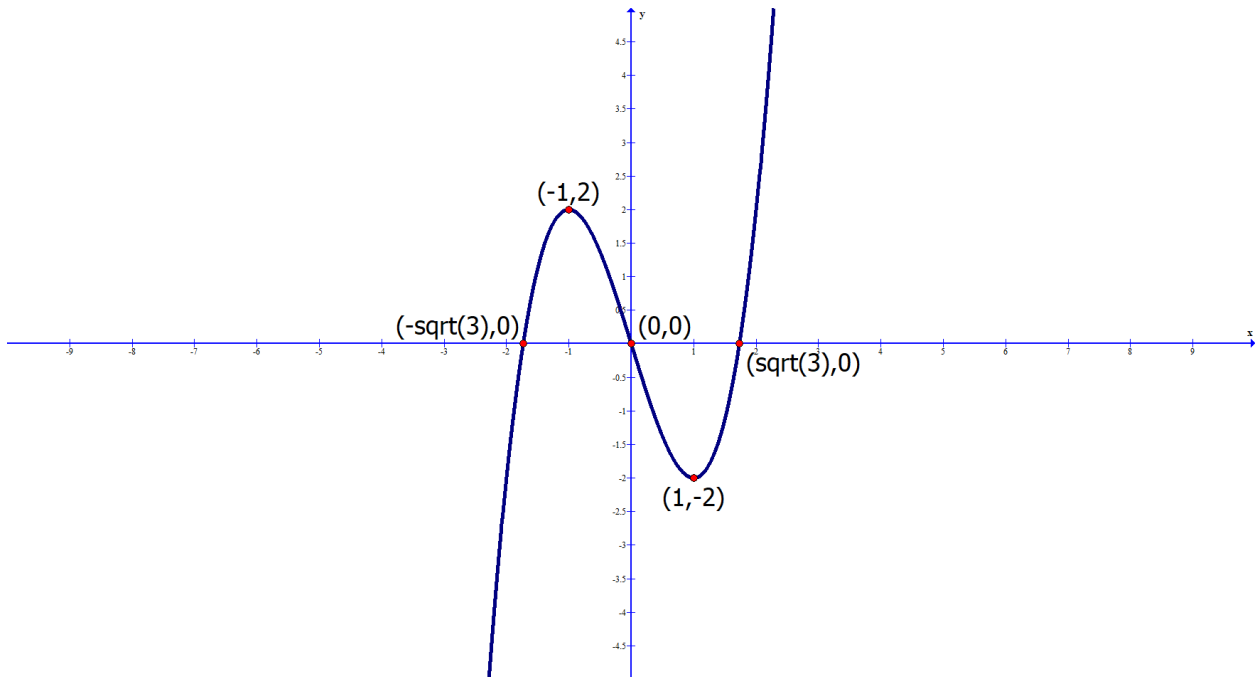
- 1a) interval(s) where the graph is increasing. $(-\infty, -1) \cup (0, 1)$
- 1b) interval(s) where the graph is decreasing. $(-1, 0) \cup (1, \infty)$
- 1c) the coordinates of relative maximum point if any $(-1, 3)$ and $(1, 3)$
- 1d) the relative maximum value $y = 3$ when $x = -1, 1$
- 1e) the coordinates of the relative minimum point if any $(0, 2)$
- 1f) the relative minimum value $y = 2$ when $x = 0$

- 2a) $f'(x) = 6e^x(x + 1)$
- 2b) the critical numbers $x = -1$
- 2c) interval(s) where the graph is increasing. $(-1, \infty)$
- 2d) interval(s) where the graph is decreasing. $(-\infty, -1)$
- 2e) the coordinates of relative maximum point if any none
- 2f) the relative maximum value none
- 2g) the coordinates of the relative minimum point if any $(-1, \frac{-6}{e})$
- 2h) the relative minimum value $y = -\frac{6}{e}$ when $x = -1$

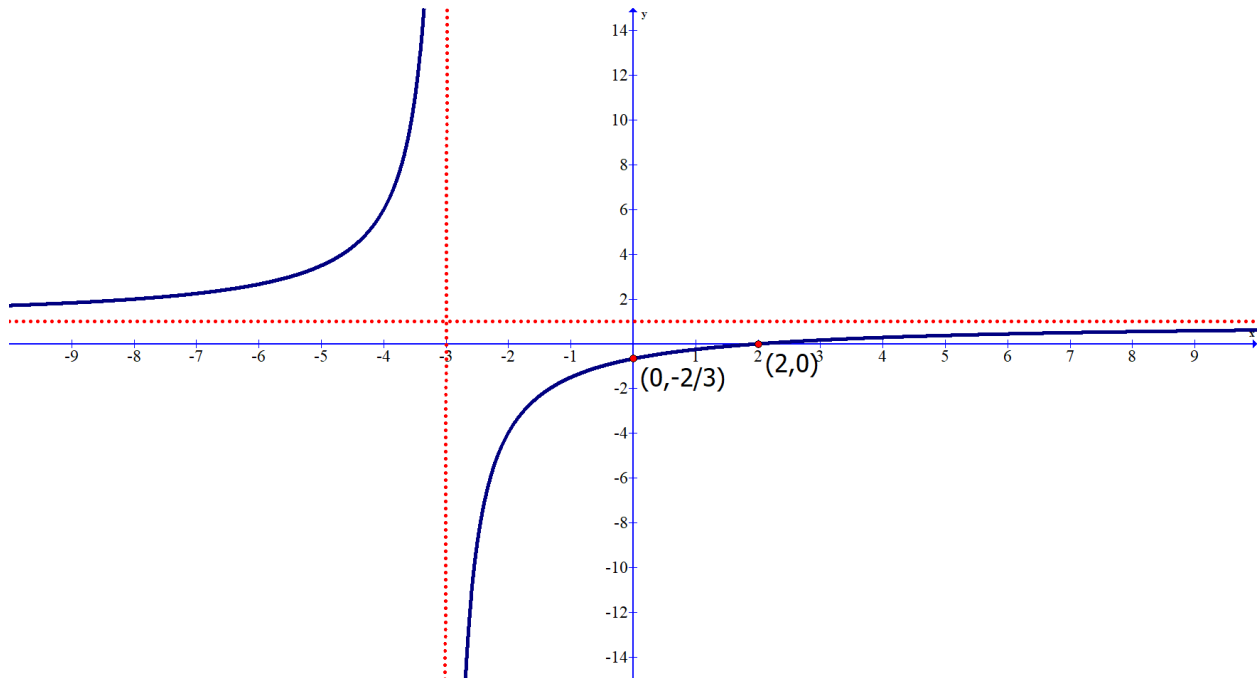
- 3a) Find the open interval(s) where the graph of the function is concave up $(5, \infty)$
- 3b) Find the open interval(s) where the graph of the function is concave down. $(-\infty, 5)$
- 3c) Find all inflection points $(5, -16)$

- 4a) Find the open interval(s) where the graph of the function is concave up $(10, \infty)$
- 4b) Find the open interval(s) where the graph of the function is concave down. $(-\infty, 10)$
- 4c) Find all inflection points $(10, -2000)$

- 5a) Find the x-intercept(s), if any $(0,0)$ and $(\sqrt{3}, 0)$ $(-\sqrt{3}, 0)$
- 5b) Find the y-intercept, if there is one $(0,0)$
- 5c) Find the interval(s) where the graph of the function is increasing $(-\infty, -1) \cup (1, \infty)$
- 5d) Find the interval(s) where the graph of the function is decreasing $(-1, 1)$
- 5e) Find all relative maxima $(-1, 2)$
- 5f) Find all relative minima $(1, -2)$
- 5g) Find the interval(s) where the graph of the function is concave up (if any) $(0, \infty)$
- 5h) Find the interval(s) where the graph of the function is concave down (if any) $(-\infty, 0)$
- 5i) Find all inflection points (if any) $(0, 0)$
- 5j) Sketch a graph



- 6a) Find the domain $(-\infty, -3) \cup (-3, \infty)$
- 6b) Find the equation of the vertical asymptote $x = -3$
- 6c) Find the x-intercept(s), if any $(2, 0)$
- 6d) Find the y-intercept, if there is one $(0, -\frac{2}{3})$
- 6e) Find all horizontal asymptotes $y = 1$
- 6f) Find the interval(s) where the graph of the function is increasing $(-\infty, -3) \cup (-3, \infty)$
- 6g) Find the interval(s) where the graph of the function is decreasing *never*
- 6h) Find all relative maxima *none*
- 6i) Find all relative minima *none*
- 6j) Find the interval(s) where the graph of the function is concave up (if any) $(-\infty, -3)$
- 6k) Find the interval(s) where the graph of the function is concave down (if any) $(-3, \infty)$
- 6l) Find all inflection points (if any) *none*
- 6m) Sketch a graph



- 7a) Create a revenue function. $R(x) = -2x^2 + 90x$
- 7b) Create a profit function. $P(x) = -2.5x^2 + 60x - 100$
- 7c) How many units must the company produce and sell to maximize profit? *12 units*
- 7d) What is the maximum profit? *\$260*
- 7e) What price per unit must be charged to make maximum profit? *\$66*