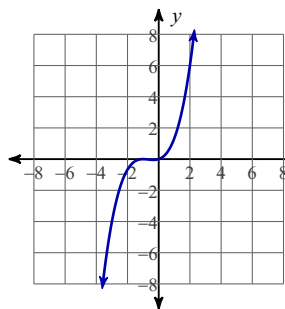


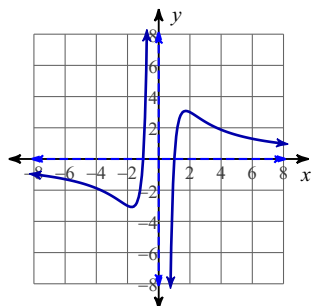
Answers to Chapter 3 Review (ID: 1)

1)



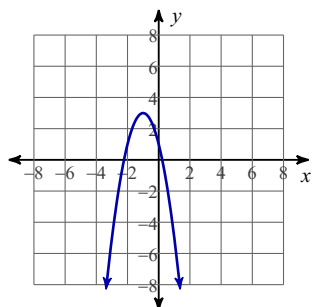
Critical points at: $x = -1, -\frac{1}{3}$
 Increasing: $(-\infty, -1), (-\frac{1}{3}, \infty)$ Decreasing: $(-1, -\frac{1}{3})$
 Inflection point at: $x = -\frac{2}{3}$
 Concave up: $(-\frac{2}{3}, \infty)$ Concave down: $(-\infty, -\frac{2}{3})$
 Relative minimum: $(-\frac{1}{3}, -\frac{4}{81})$ Relative maximum: $(-1, 0)$

2)



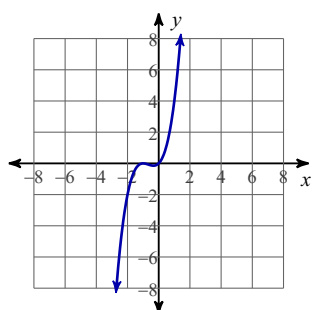
Critical points at: $x = -\sqrt{3}, \sqrt{3}$
 Increasing: $(-\sqrt{3}, 0), (0, \sqrt{3})$ Decreasing: $(-\infty, -\sqrt{3}), (\sqrt{3}, \infty)$
 Inflection points at: $x = -\sqrt{6}, \sqrt{6}$
 Concave up: $(-\sqrt{6}, 0), (\sqrt{6}, \infty)$ Concave down: $(-\infty, -\sqrt{6}), (0, \sqrt{6})$
 Relative minimum: $(-\sqrt{3}, -\frac{16\sqrt{3}}{9})$ Relative maximum: $(\sqrt{3}, \frac{16\sqrt{3}}{9})$

3)



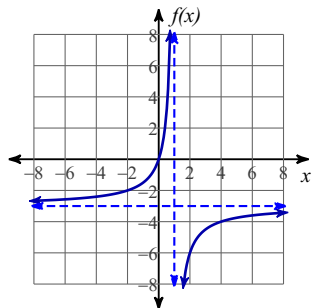
Critical point at: $x = -1$
 Increasing: $(-\infty, -1)$ Decreasing: $(-1, \infty)$
 No inflection points exist.
 Concave up: No intervals exist. Concave down: $(-\infty, \infty)$
 No relative minima. Relative maximum: $(-1, 3)$

4)



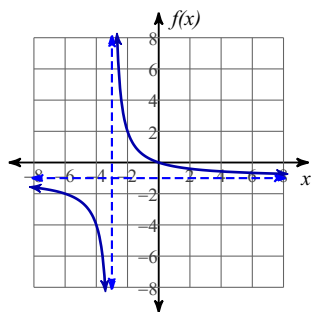
Critical points at: $x = -1, -\frac{1}{3}$
 Increasing: $(-\infty, -1), (-\frac{1}{3}, \infty)$ Decreasing: $(-1, -\frac{1}{3})$
 Inflection point at: $x = -\frac{2}{3}$
 Concave up: $(-\frac{2}{3}, \infty)$ Concave down: $(-\infty, -\frac{2}{3})$
 Relative minimum: $(-\frac{1}{3}, -\frac{4}{27})$ Relative maximum: $(-1, 0)$

5)



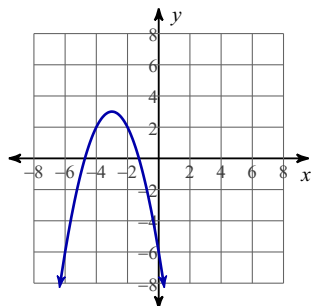
No critical points exist.
 Increasing: $(-\infty, 1), (1, \infty)$ Decreasing: No intervals exist.
 No inflection points exist.
 Concave up: $(-\infty, 1)$ Concave down: $(1, \infty)$
 No relative minima. No relative maxima.

6)



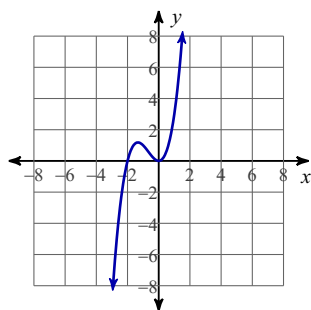
No critical points exist.
 Increasing: No intervals exist. Decreasing: $(-\infty, -3), (-3, \infty)$
 No inflection points exist.
 Concave up: $(-3, \infty)$ Concave down: $(-\infty, -3)$
 No relative minima. No relative maxima.

7)



Critical point at: $x = -3$
 Increasing: $(-\infty, -3)$ Decreasing: $(-3, \infty)$
 No inflection points exist.
 Concave up: No intervals exist. Concave down: $(-\infty, \infty)$
 No relative minima. Relative maximum: $(-3, 3)$

8)



Critical points at: $x = -\frac{4}{3}, 0$
 Increasing: $(-\infty, -\frac{4}{3}), (0, \infty)$ Decreasing: $(-\frac{4}{3}, 0)$
 Inflection point at: $x = -\frac{2}{3}$
 Concave up: $(-\frac{2}{3}, \infty)$ Concave down: $(-\infty, -\frac{2}{3})$
 Relative minimum: $(0, 0)$ Relative maximum: $(-\frac{4}{3}, \frac{32}{27})$

9) 25 ft (non-adjacent sides) by $\frac{100}{3}$ ft (adjacent sides)

10) $(\frac{1}{2}, \frac{\sqrt{2}}{2})$

11) $\frac{24}{4 + \pi}$ ft (width) by $\frac{12}{4 + \pi}$ ft (height)