

1. §4.4, p.241, #20: Find $\lim_{x \rightarrow -\infty} (x + \sqrt{x^2 + 2x})$.

2. §4.4, p.241, #46: Find the horizontal asymptotes of the curve and use them, together with intervals of concavity and increasing or decreasing to sketch the curve $f(x) = \frac{x}{\sqrt{x^2 + 1}}$.

3. §4.4, p.242, #52: Sketch the graph of the function satisfying:

$$f'(2) = 0, f'(0) = 1, f'(x) > 0 \text{ if } 0 < x < 2,$$

$$f'(x) < 0 \text{ if } x > 2, f''(x) < 0 \text{ if } 0 < x < 4,$$

$$f''(x) > 0 \text{ if } x > 4, \lim_{x \rightarrow \infty} f(x) = 0, f(-x) = -f(x) \text{ for all } x$$

4. §4.5, p.249, #28: Use the guidelines of this section to sketch the curve $y = x^{5/3} - 5x^{2/3}$.

5. §4.5, p.249, #48: Use the guidelines of this section to sketch the curve $y = \frac{x^2 + 12}{x - 2}$. In guideline D find the equation of the slant asymptote.