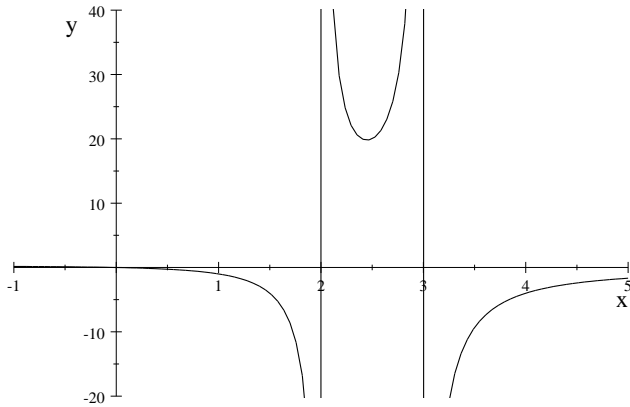


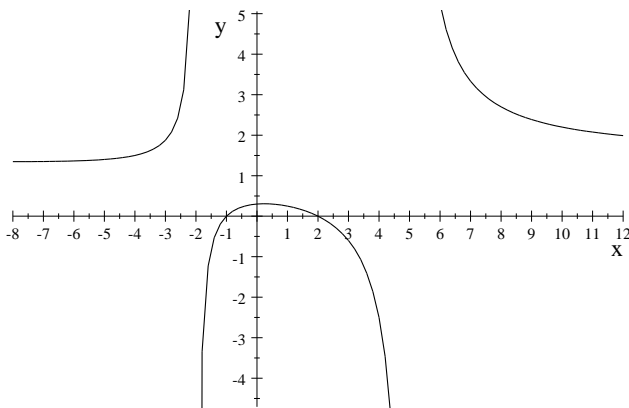
- 1) horizontal asymptote: $y = 0$
 vertical asymptotes: $x = 2, x = 3$

Here is the graph of the function:



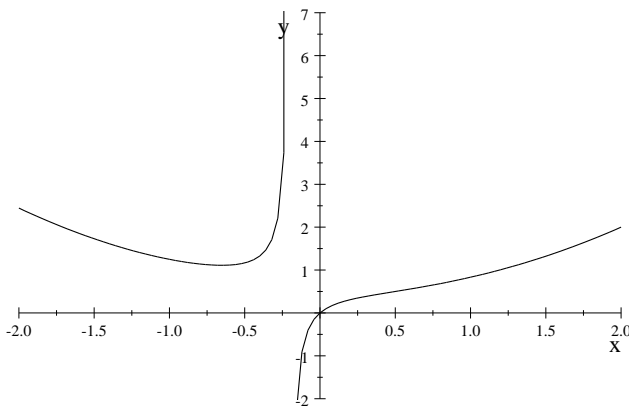
- 2) horizontal asymptote: $y = \frac{3}{2}$
 vertical asymptotes: $x = 5, x = -2$

Here is a graph of the function:



- 3) no horizontal asymptotes
 Vertical asymptote: $x = -\frac{1}{5}$

Here is a graph of the function:



4) $x = -4$

5) $x = -11$

6) $x = 0, x = \frac{1}{2}$

7) $\$7147.51$

8) approximately 5.58 years

9) $\log_4 2 = 0.5$

10) approximately 9.974

11) approximately 2.5789

12) $x = 35$

13) $x = 0$ only

14) $x \approx 2.5932$

15) $\log_b 20 = 2x + y$

16) $\log_4 64 = 3, \log_3 \frac{1}{9} = -2$

17) $2 + \log_4 p - \frac{1}{2} \log_4 q$

18) a) $-\frac{3}{5},$ b) 0

19) $-28e^{2x}$

20) $2xe^{-3x}(3x - 2)$

21) $\frac{1 - \ln(2x + 6)}{(x + 3)^2}$

22) $y' = 3(x^3 + e^{2x})^2(3x^2 + 2e^{2x})$

23) $\frac{e^x \ln x(x^3 + 2x^2 + 2x) - e^x(x^2 + 2)}{x(\ln x)^2}$

24) $y' = 3x^2(3x - 5)^2(6x - 5)$

25) $g'(x) = \frac{3x^2(9x - 10)\sqrt{3x - 5}}{2}$

26) $m = 2e, y = (2e)x - e$

27) $m = -\frac{5}{4}$

28) (a) Increasing: $(-\infty, -2) \cup (\frac{2}{3}, \infty)$

(b) The function never is increasing.

29) relative maximum: $f(-2) = 25$, relative minimum: $f(1) = -2$

30) relative maximum: $f(e^{1/2}) = \frac{1}{4e}$

31) $f''(x) = 54x + \frac{4}{x^3}$

32) $g''(x) = \frac{80}{(4x+3)^3}$

33) $f''(x) = 4 - 30x + \frac{6}{x^4}$
 $f''(2) = -\frac{445}{8}$ $f''(5) = -\frac{91244}{625}$

34) concave upward: $(-\infty, -1) \cup (1, \infty)$, concave downward: $(-1, 1)$

35) concave upward: $(-\infty, -1) \cup (\frac{1}{2}, \infty)$, concave downward: $(-1, \frac{1}{2})$

36) point of inflection: $(3, 0)$