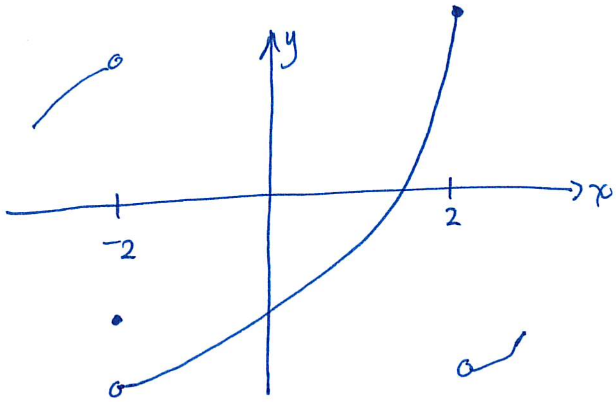
Section 2.5

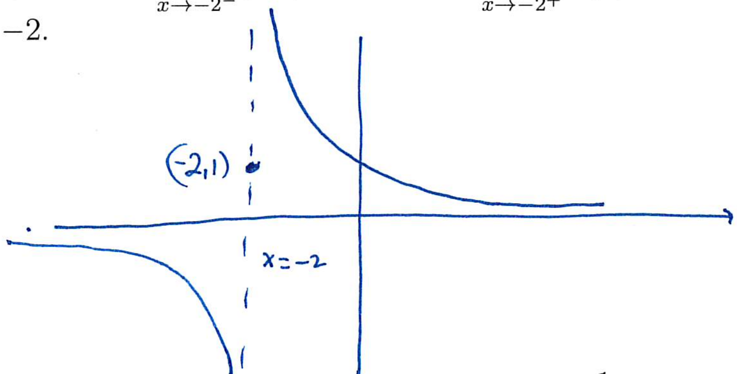
1. $f(4)$

4. g is continuous on $[-3,2), (-2,-1), (-1,0], (0,1)$, and $(1,3]$.

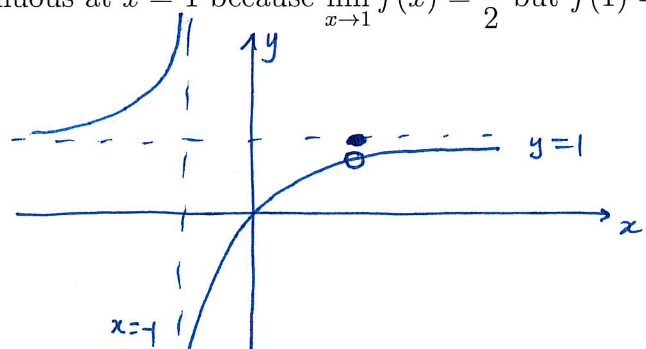
8. 

11. 81

18. $f(-2) = 1$ but $\lim_{x\to -2^-} f(x) = -\infty$ and $\lim_{x\to -2^+} f(x) = \infty$ so f is discontinuous at $x = -2$.



20. f is discontinuous at $x = 1$ because $\lim_{x\to 1} f(x) = \dfrac{1}{2}$ but $f(1) = 1$.



35. f is continuous at $x = 2$ so $\lim_{x\to 2} f(x) = f(2)$.

36. 0

37. $\ln(2)$

38. 3^2

39. f is continous for all x.

46. $a = b = \frac{1}{2}$

54. $f(2) \approx 0.107$ and $f(3) \approx -0.169$ therefore by intermediate value theorem, there is a root of f on $(2, 3)$.

55. $f(1) = \sin(1) \approx 0.84$ and $f(2) = sin(2) - 2 \approx -1.09$, thefore by IVT, f has a root on $(1, 2)$.

71. 0, use the Squeeze Theorem!

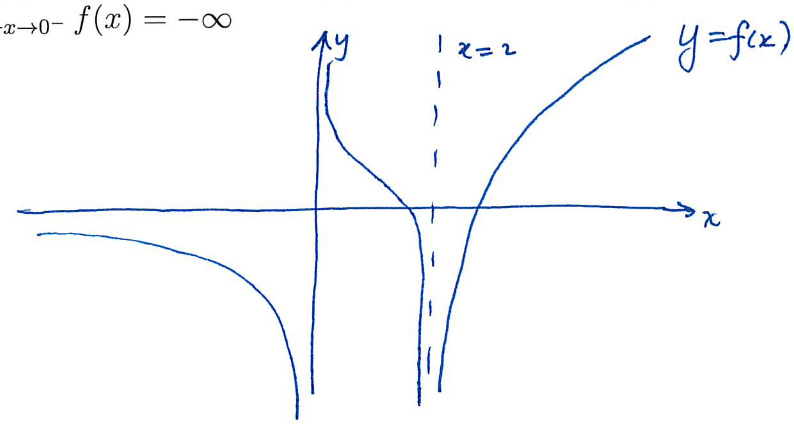
Section 2.6

1,4,7,15-42,49,67

1. (a) As x becomes large, the values of $f(x)$ approach 5. (b) As x becomes large and negative, the values of $f(x)$ approach 3.

4. (a) 2 (b) -1 (c) $-\infty$ (d) $-\infty$ (e) ∞ (f) Vertical: $x = 0, x = 2$, Horizontal: $y = -1, y = 2$.

7. $\lim_{x\to 2} f(x) = -\infty$, $\lim_{x\to\infty} f(x) = \infty$, $\lim_{xto-\infty} f(x) = 0$, $\lim_{x\to 0^+} f(x) = \infty$, $\lim_{x\to 0^-} f(x) = -\infty$



15. $\frac{3}{2}$

16. 0

17. 0

18. 2

19. -1

20. $-\frac{1}{2}$

21. 4

22. 1

23. -2

24. 2

25. $\frac{\sqrt{3}}{4}$

26. ∞

27. $\frac{1}{6}$

28. $-\frac{3}{4}$

29. $\frac{a-b}{2}$

30. ∞

31. ∞

32. D.N.E

33. ∞

34. ∞

35. $\frac{\pi}{2}$

36. 1

37. $-\frac{1}{2}$

38. 0

39. 0

40. $-\frac{pi}{2}$

41. ∞

42. $\ln(1) = 0$

49. $y = 2$ is a horizontal asymptote, $x = -2, x = 1$ are vertical asymptotes.

67. 5 by the Squeeze Theorem!