Super-30
(NM-I)

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MATHEMATICS
Daily Practice Problems
Target IIT JEE 2020

Class:XI　　　　**Topic : Domain**　　　　**DPP. NO.-17**

The domain of definition of the function :

1.　$y = \sqrt{2x - x^2}.$

2.　$f(x) = \sqrt{x^2 - 5x + 6}$

3.　$y = \sqrt{\dfrac{x+3}{5-x}}$

4.　$y = \sqrt{-4x^2 + 4x + 3}$

5.　$y = \sqrt{6 + 7x - 3x^2}$

6.　$y = \sqrt{\dfrac{1}{2x^2 - 5x - 3}}$

7.　$f(x) = \sqrt{4x - x^3}$

8.　$f(x) = \sqrt{3x - x^3}$

9.　$f(x) = \sqrt{\dfrac{(2x+1)}{x^3 - 3x^2 + 2x}}$

10.　$y = \sqrt{5 - x - \dfrac{6}{x}}$

11.　$y = \sqrt{\dfrac{x^2 - 7x + 12}{x^2 - 2x - 3}}$

12.　$y = \sqrt{\dfrac{x^2 - 5x + 6}{x^2 + 6x + 8}}$

13.　$y = \log_2 \dfrac{x-2}{x+2}$

14.　$f(x) = \log \dfrac{x+3}{x+1}$

15.　$y = \log \dfrac{x^2 + 8x + 7}{x^2 + 7}$

16.　$y = \log\left((x^2 - 3x)(x+5)\right)$

17.　$f(x) = \ln\left(\dfrac{20}{(x-3)(x-4)} + \dfrac{10}{x-4} + 1\right)$

18.　$f(x) = \sqrt{\left(\dfrac{2}{x^2 - x + 1} - \dfrac{1}{x+1} - \dfrac{2x-1}{x^3 + 1}\right)}$

19.　$f(x) = \sqrt{(x-1)(x-2)(3-x)(x+1)(2-x)}$

20.　$f(x) = \sqrt{\left(\dfrac{1}{x^2 + 1} + \dfrac{2}{x^3 - x^2 + x - 1} + \dfrac{1}{x^3 + x^2 + x + 1}\right)}$

21.　$f(x) = \sqrt{\dfrac{(x-4)(x-5)(x-2)}{x^4 - 2x^3 - x^2 + 2x}}$

22.　$y = \sqrt{x-1}\sqrt{x+1}$

23.　$y = \sqrt{x-1} + \sqrt{6-x}$

24.　$f(x) = \sqrt{2-x} + \sqrt{1+x}$

25.　$f(x) = \sqrt{x^2 - x - 20} + \sqrt{6-x}$

26.　$y = \sqrt{1-x^2} + \sqrt{3x - x^2 - 2}$

27.　$y = \sqrt{x^2 - x - 20} + \dfrac{1}{\sqrt{x^2 - 5x - 14}}$

28.　$y = \dfrac{1}{\sqrt{14 + 5x - x^2}} + \sqrt{x^2 - x - 20}$

29.　$y = \dfrac{1}{x-1} + \sqrt{2+x}$

30.　$y = \dfrac{\sqrt{4 - 3x - x^2}}{x+4}$

31.　$f(x) = \dfrac{\sqrt{12 + x - x^2}}{x(x-2)}$

32. $f(x) = \dfrac{\sqrt{x^2 + x - 6}}{x^2 - 4}$

33. $y = \dfrac{\sqrt{x + 12 - x^2}}{x^2 - 9}$

34. $f(x) = \log_x e$

35. $\dfrac{1}{\log_{10}(1 - x)} + \sqrt{(x + 2)}$

36. $\sqrt{4 - x} + \dfrac{1}{\log_{10} x}$

37. $y = \dfrac{1}{3 - \log_3(x - 3)}$

38. $y = \dfrac{\sqrt{x + 5}}{\log(9 - x)}$

39. $y = \sqrt{4x - x^2} - \log_3(x - 2)$

40. $y = \sqrt{x^2 + 4x - 5} \cdot \log(x + 1)$

41. $f(x) = \log(5x^2 - 8x - 4) + \sqrt{x - 1}$

42. $y = \sqrt{x^2 + 4x - 5} \cdot \log(x + 5)$

43. $y = \dfrac{\log(3 - 2x - x^2)}{\sqrt{x}}$

44. $y = \log(5x^2 - 8x - 4) + (x + 3)^{-0.5}$

45. $y = \sqrt{4x - x^2} + \log(x^2 - 1)$

46. $y = \sqrt{16x - x^5} + \log_{1/2}(x^2 - 1)$

47. $f(x) = \dfrac{1}{\sqrt{4x^2 - 1}} + \ln x(x^2 - 1)$

48. $y = \sqrt{\log(x + 1)}$

49. $y = \sqrt{\log \dfrac{3 - x}{x}}$

50. $y = \sqrt{\log \dfrac{1 - 2x}{x + 3}}$

51. $y = \sqrt{\log_{0.3} \dfrac{x - 1}{x + 5}}$

52. $f(x) = \sqrt{\log_{0.4}(x - x^2)}$

53. $y = \sqrt{\log_{0.3}(x^2 - 5x + 7)}$

54. $y = \sqrt{\log_{0.5}(x^2 - 9) + 4}$

55. $y = \sqrt{\log_{0.4} \dfrac{x - 1}{x + 5} \cdot \dfrac{1}{x^2 - 36}}$

56. $\sqrt{1 - \log_3 x}$

57. $f(x) = \sqrt{\log[(5x - x^2)/6]}$

58. $f(x) = \sqrt{\log_{1/2} \dfrac{x}{x^2 - 1}}$

59. $f(x) = \dfrac{1}{\sqrt{\log_{0.5}(x^2 - 7x + 13)}}$

60. $f(x) = \cos^{-1}\left(\dfrac{6 - 3x}{4}\right) + \operatorname{cosec}^{-1}\left(\dfrac{x - 1}{2}\right)$

61. $\dfrac{\sqrt{4 - x^2}}{\sin^{-1}(2 - x)}$

62. $y = \arcsin \dfrac{x - 3}{2} - \log(4 - x)$

63. $y = \sqrt{3 - x} + \arcsin \dfrac{3 - 2x}{5}$

64. $f(x) = \sin^{-1}\left(\log_2\left(\dfrac{x^2}{2}\right)\right)$

65. $f(x) = \arcsin 3^x$

66. $\log \cos x$

67. $f(x) = \dfrac{1}{\sqrt{\sin x}} + \sqrt[3]{\sin x}$ 68. $y = \sqrt{3\sin x - 1}$

69. $y = \sqrt{2\sin\dfrac{x}{2}}$

70. $y = \dfrac{1}{\sqrt{4\cos x + 1}}$ 71. $y = \sqrt{-2\cos^2 x + 3\cos x - 1}$

72. $y = \sqrt{\sin^2 x - \sin x}$ 73. $y = \arccos\dfrac{2}{2 + \sin x}$

74. $f(x) = {}^{16-x}C_{2x-1} + {}^{20-3x}P_{4x-5}$

75. $f(x) = \sqrt{2 - [x]} + \sqrt{1 + [x]}$

76. Write explicitly, functions of y defined by the following equations and also find the domains of definition of the given implicit functions :

    (a) $10^x + 10^y = 10$ (b) $x + |y| = 2y$

77. The function f(x) is defined on the interval [0, 1]. Find the domain of definition of the functions
    (a)   f(sin x)   (b)   f(2x + 3)

78. The function $f(x)$ is defined in [0, 1]. Find the domain of $f(\tan x)$, $f(3\sin x)$, $f(\log x)$, $f(|x - 2|)$

79. $f(x) = \log|4 - x^2|$ 80. $f(x) = \ln\left(\sqrt{x^2 - 5x - 24} - x - 2\right)$

81. $f(x) = \dfrac{1}{\sqrt{x - |x|}}$ 82. $f(x) = \dfrac{1}{\sqrt{|\cos x| + \cos x}}$

83. $f(x) = \log_{10}\left(\sqrt{x-4} + \sqrt{6-x}\right)$ 84. $f(x) = \sqrt{e^{\left(\sqrt{2-x} + \sqrt{1+x}\right)}}$

85. $f(x) = \cot^{-1}\left(e^x + e^{-x}\right)$ 86. $f(x) = \sqrt{\dfrac{1 - 5^x}{7^{-x} - 7}}$

87. $f(x) = \sqrt{\dfrac{3^x - 4^x}{2x^2 - x - 8}}$ 88. $f(x) = \sqrt{\dfrac{\log_{0.3}(x - 1)}{x^2 - 2x - 8}}$

89. $f(x) = \sqrt{(x^2 - 3x - 10)\ln^2(x - 3)}$

90. $f(x) = \sqrt{77^x - 777^x} + \sqrt{3 - x} + \sin^{-1}\left(\dfrac{3 - 2x}{5}\right)$

91. $f(x) = \sqrt{\cos 2x} + \sqrt{16 - x^2}$ 92. $y = \log_{10}\sin(x - 3) + \sqrt{16 - x^2}$

93. $f(x) = \sqrt{\log_x(\cos 2\pi x)}$, $f(x) = \log_x \sin x$

94. $y = \dfrac{\sqrt{\cos x - 1/2}}{\sqrt{6 + 35x - 6x^2}}$ 95. $f(x) = \sqrt{\log_{10}\left(\dfrac{5x - x^2}{4}\right)} + \sqrt{\cosec x} + (\sin x)^{\frac{1}{3}}$

96. $f(x) = \sqrt{\cos(\sin x)} + \sqrt{\dfrac{x-2}{x+2}} + \sqrt{\dfrac{1+x}{1+x}}$

97. $f(x) = \sin|x| + \sin^{-1}(\tan x) + \sin(\sin^{-1} x)$ 98. $f(x) = \sqrt{x^2 - |x|} + \dfrac{1}{\sqrt{9 - x^2}}$

99. $f(x) = \sqrt{\dfrac{x}{1-|x|}} + \log_e\left(\sqrt{x+2} + \sqrt{2-x}\right)$

100. $f(x) = \dfrac{1}{x} + 3^{\cos^{-1}x} + \dfrac{1}{\sqrt{x-2}}$ 101. $f(x) = \dfrac{1}{(|x|-1)\{\cos^{-1}(2x+1)\}\tan 3x}$

102. $f(x) = \sqrt{\{\cos(\sin x)\}} + \sin^{-1}\{(1+x^2)/(2x)\}$ 103. $f(x) = \dfrac{\log_{2x} 3}{\cos^{-1}(2x-1)}$

104. $f(x) = \log_{10}\log_{10}(1 + x^3)$ 105. $f(x) = \log_{100x}\left(\dfrac{2\log_{10} x + 1}{-x}\right)$

106. $f(x) = \underbrace{\log_{10}\log_{10}\log_{10}\log_{10}\ldots\ldots\log_{10} x}_{n-\text{times } \log}$

107. $f(x) = \log_7\log_5\log_3\log_2(2x^3 + 5x^2 - 14x)$

108. $f(x) = \log_{10}(1 - \log_{10}(x^2 - 5x + 16))$

109. $f(x) = \sqrt{\log_{0.3}\left(\dfrac{-3}{(x-1)(x-2)} + \dfrac{3}{x-2} + 2\right)}$

110. $\psi(x) = \sqrt{\dfrac{(\log_{0.2} x)^3}{{}+ (\log_{0.2} x^3)(\log_{0.2} 0.0016x) + 36}}$ $D_\psi.$

111. $f(x) = \log_2\left(-\log_{1/2}\left(1 + \dfrac{1}{\sqrt[4]{x}-1}\right)\right)$

112. $f(x) = 3^{\cos^{-1}\left(\log_e \sqrt{1-e^{2x}}\right)}$

113. $f(x) = \log_{10}\log_2\log_{2/\pi}(\tan^{-1} x)^{-1}$ 114. $f(x) = \sqrt{\log_{1/3}\left(\log_4\left(|x|^2 - 5\right)\right)}$

115. If a function is defined as $g(x) = |\sin x| + \sin x$, $\phi(x) = \sin x + \cos x$, $0 \le x \le \pi$
    then find the domain for $f(x) = \sqrt{\log_{\phi(x)} g(x)}$.

116. $f(x) = \sqrt{{}^{x^2+4x}C_{2x^2+3}}$ 117. $f(x) = \sqrt{\log_{1/2}\left(\dfrac{5x - x^2}{4}\right) + {}^{10}C_x}$

118. (a) $f(x) = \sin^{-1}[2x^2 - 3]$, where $[.]$ denotes the greatest integer function.

    (b) $f(x) = \log_{\left[x+\frac{1}{x}\right]}|x^2 - x - 6| + {}^{16-x}C_{2x-1} + {}^{20-3x}P_{2x-5}$

119. $f(x) = \cosec^{-1}[1 + \sin^2 x]$, where $[.]$ denotes greatest integer funcntion.

120. $f(x) = \sin^{-1}\left(\dfrac{[x]}{\{x\}}\right)$, where [.] and {.} denotes the greatest integer and fractional part.

121. $f(x) = \cos^{-1}\sqrt{\log[x]\dfrac{|x|}{x}}$, where [.] denotes the greatest integer.

122. $f(x) = \dfrac{1}{[x]} + \log_{1-\{x\}}(x^2 - 3x + 10) + \dfrac{1}{\sqrt{2-|x|}} + \dfrac{1}{\sqrt{\sec(\sin x)}}$

123. $f(x) = \dfrac{3}{\left[\dfrac{x}{2}\right]} - 5\cos^{-1}x^2 + \dfrac{(2x+1)!}{\sqrt{x+1}}$, where [.] denotes the greatest integer.

124. $f(x) \dfrac{\sqrt{\sin^{-1}x + \sqrt{x^2+1}} + \sqrt{x - [x] + \log x}}{e^{\sqrt{\sin x + \cos x}} + \log\left(\sin\left(\dfrac{1}{\sqrt{-x^2}}\right)\right)}$

125. $f(x) = \sqrt{(5x-6-x^2)\left[\{\ln\{x\}\}\right]} + \sqrt{(7x-5-2x^2)} + \left(\ln\left(\dfrac{7}{2} - x\right)\right)^{-1}$

126. $f(x) = \log_{(\operatorname{cosec} x - 1)}(2 - [\sin x] - [\sin x]^2)$

127. If domain for $y = f(x)$ is [-3, 2], find domain of $g(x) = f\{|[x]|\}$.

128. $f(x) = \dfrac{x}{\sqrt{\sin(\ln x) - \cos(\ln x)}}$

129. $f(x) = \left(\pi^{3-x} - e^{2x-1}\right)^{1/2002} + \sqrt{\cos(\sin x)}$

130. $f(x) = \log(e^x - x)$

131. $f(x) = \sqrt{\sqrt{\sin x} + \sqrt{\cos x} - 1}$

132. $f(x) = \dfrac{1}{[|x-2|] + [|x-10|] - 8}$

133. Find the domain of $\sqrt{[f(x)] + 1 \cdot 2}$, where $f(x) = 2\left|\sqrt{x^2 - 2x + 1} - e^{\int_0^1\left(\frac{1}{x+1}\right)dx}\right|$

134. Find domain and range of

$f(x) = \sqrt{(1-\cos x)\sqrt{(1-\cos x)\sqrt{(1-\cos x)\sqrt{\ldots\ldots\ldots\infty}}}}$

135. Let $f(x) = \log_2\left(\log_3\left(\log_4\left(\log_5(\sin x + b^2)\right)\right)\right)$, where $b \in R$. Find values of 'b' so that f(x) has domain $(-\infty, \infty)$.

136. Let $f(x) = \operatorname{sgn}\left(\log_{0.5}\left(\log_6\left(\dfrac{x^2+x}{x+4}\right)\right)\right)$ and range of $f(x) \in \{-1\}$. Find domain of f(x).

137. $f(x) = \dfrac{[x]}{2x - [x]}$

ANSWER

1. $D(y) = [0,2]$ **2.** $x \in (-\infty, 2] \cup [3, \infty)$ **3.** $D(y) = [-3,5)$ **4.** $D(y) = [-1/2, 3/2]$

5. $D(y) = [-2/3, 3]$ **6.** $D(y) = (-\infty, -1/2) \cup (3, +\infty)$ **7.** $D(f) = (-\infty, -2] \cup [0,2]$

8. $D(f) = (-\infty, -\sqrt{3}] \cup [0, \sqrt{3}]$ **9.** $x \in (-\infty, -1/2] \cup (0,1) \cup (2, \infty)$ **10.** $D(y) = (-\infty, 0) \cup [2,3]$

11. $D(y) = (-\infty, -1) \cup [4, +\infty]$ **12.** $D(y) = (-\infty, -4) \cup (-2,2) \cup (2, +\infty)$ **13.**

$D(y) = (-\infty, -2) \cup (2, +\infty)$ **14.** $D(y) = (-\infty, -3) \cup (-1, +\infty)$ **15.** $D(y) = (-\infty, -7) \cup (-1, +\infty)$

16. $D(y) = (-5, 0) \cup (3, +\infty)$ **17.** $x \in (-\infty, -2) \cup (-1, 3) \cup (4, \infty)$ **18.** $x \in (-\infty, -1) \cup (1, 2]$

19. $[-1, 1] \cup [3, \infty) \cup \{2\}$ **20.** $(-\infty, -3] \cup (-1, 0] \cup [1, \infty)$ **21.** $(-1, 0) \cup (1, 4] \cup [5, \infty) - \{2\}$

22. $D(y) = [-1, 1]$ **23.** $D(y) = [1, 6]$ **24.** $D(f) = [-1, 2]$ **25.** $D(f) = (-\infty, -4] \cup [5, 6]$

26. $D(y) = \{1\}$ **27.** $D(y) = (-\infty, -4] \cup (7, +\infty)$ **28.** $D(y) = [5, 7)$

29. $D(y) = [-2, 1] \cup (1, +\infty)$ **30.** $D(y) = (-4, 1]$ **31.** $(-3, 0) \cup (0, 2)$

32. $D(f) = (-\infty, -3] \cup (2, +\infty)$ **33.** $D(y) = (-3, 3) \cup (3, 4]$ **34.** $[0, \infty[- 1$

35. $(-2 \le x < 0) \cup (0 < x < 1)$ **36.** $x \in (0, 4] - \{1\}$ **37.** $D(y) = (3, 30) \cup (30, +\infty)$

38. $D(y) = (-5, 8] \cup (8, 9)$ **39.** $D(y) = (2, 4)$ **40.** $D(y) = [1, +\infty]$

41. $D(f) = [2, +\infty]$ **42.** $D(y) = [1, +\infty)$ **43.** $D(y) = (0, 1)$

44. $D(y) = (-3, -2/5) \cup (2, +\infty)$ **45.** $D(y) = (1, 4)$ **46.** $]-\infty, -2] \cup]1, 2]$

47. $(-1 < x < -1/2) \cup (x > 1)$ **48.** $D(y) = [0, +\infty)$ **49.** $D(y) = (0, 3/2)$

50. $D(y) = (-3, -2/3]$ **51.** $D(y) = (1, +\infty)$ **52.** $(0, 1)$

53. $D(y) = [2, 3]$ **54.** $D(y) = [-5, -3] \cup (3, 5)$ **55.** $D(y) = (1, 6) \cup (6, +\infty)$ **56.** $x \in (0, 3]$

58. $\left[\dfrac{1 - \sqrt{5}}{2}, 0 \right) \cup \left[\dfrac{1 + \sqrt{5}}{2}, \infty \right)$ **59.** $x \in (3, 4)$ **60.** $\left[3, \dfrac{10}{3} \right]$

61. $[1, 2)$ **62.** $D(y) = [1, 4)$ **63.** $D(y) = [-1, 3]$

64. $[-2, -1] \cup [1, 2]$ **65.** $D(y) = (-\infty, 0]$ **66.** $\{ x : 2n\pi - \pi/2 < x < 2n\pi + \pi/2 \}, n \in I$

67. $(2K\pi, (2k+1)\pi)$ **68.** $D(y) = \{ [2\pi n + \arcsin(1/3); \pi(2n+1) - \arcsin(1/3)] \mid n \in Z \}$

69. $D(y) = \{ [4\pi n, 2\pi(2n+1)] \mid n \in Z \}$

70. $D(y) = \{ (\pi(2n-1) + \arccos(1/4), \pi(2n+1) - \arccos(1/4)) \mid n \in Z \}$

71. $D(y) = \{ [\pi(6n-1)/3, \pi(6n+1)/3] \mid n \in Z \}$

72. $D(y) = \{ \pi(4n+1)/2, \mid n \in Z \} \cup \{ [\pi(2m+1), 2\pi(m+1)] \mid m \in Z \}$

73. $D(y) = \{ [2\pi n, \pi(2n+1)] \mid n \in Z \}$ **74.** $\{2, 3\}$ **75.** $[-1, 3)$

76.(a) $y = \log(10 - 10^x), -\infty < x < 1$, (b) $y = x/3$ when $-\infty < x < 0$ & $y = x$ when $0 \le x < +\infty$

77.(a) $2K\pi \le x \le 2K\pi + \pi$ where $K \in I$ (b)$[-3/2, -1]$ **78.** $f(\tan x) \in \left[n\pi, n\pi + \dfrac{\pi}{4} \right]$.

79. $4 - x^2 \ne 0$ **80.** $(-\infty, -3]$ **81.** ϕ **82.** $\left(\dfrac{(4n-1)\pi}{2}, \dfrac{(4n+1)\pi}{2} \right)$ **83.** $x \in [4, 6]$ **84.** $[-1, 2]$

85. R   **86.** $(-\infty, -1) \cup [0, \infty)$ **87.** $\left(-\infty, \dfrac{1 - \sqrt{65}}{4} \right) \cup \left[0, \dfrac{1 + \sqrt{65}}{4} \right)$ **88.** $x \in (2, 4)$ **89.** $[5, \infty)$

90. $[-1, 0]$ **91.** $\left[-\dfrac{5\pi}{4}, \dfrac{-3\pi}{4} \right] \cup \left[-\dfrac{\pi}{4}, \dfrac{\pi}{4} \right] \cup \left[\dfrac{3\pi}{4}, \dfrac{5\pi}{4} \right]$ **92.** $(3 - 2\pi < x < 3 - \pi) \cup (3 < x \le 4)$

93. $(0, 1/4) \cup (3/4, 1) \cup \{x : x \in N, x \ge 2\}$, $2K\pi < x < (2K+1)\pi$ but $x \ne 1$ where K is non-negative integer

94. $[0, \pi/3] \cup [5\pi/3, 6]$ **95.** $[1, \pi)$ **96.** ϕ **97.** $[-\pi/4, \pi/4]$ **98.** $(-3, -1] \cup \{0\} \cup [1, 3)$

99. $[-2, -1) \cup [0, 1)$ **100.** ϕ **101.** $\left(-1, \dfrac{\pi}{6} \right) \cup \left(\dfrac{-\pi}{6}, 0 \right)$ **102.** $x = -1$ and $x = 1$

103. $x \in (0, 1/2) \cup (1/2, 1)$ **104.** $(0, \infty)$ **105.** $\left(0, \dfrac{1}{100} \right) \cup \left(\dfrac{1}{100}, \dfrac{1}{\sqrt{10}} \right)$ **106.** $(10^{10^{10}}, \infty)$

107. $\left(-4, -\dfrac{1}{2} \right) \cup (2, \infty)$ **108.** $x \in (2, 3)$ **109.** $[-2, 1)$ **110.** $[0, 25]$

111. $(0, 1)$ **112.** $\left(-\infty, \dfrac{1}{2} \log_e \left(1 - \dfrac{1}{e^2} \right) \right]$ **113.** ϕ **114.** $[-3, -2) \cup [3, 4)$

115. Domain of $f(x)$ is $\left[\dfrac{\pi}{6}, \dfrac{\pi}{2} \right)$ **116.** $x \in \{1, 2, 3\}$ **117.** $x \in \{1, 4\}$

118.(a) $\left[-\sqrt{\dfrac{5}{2}}, -1 \right] \cup \left[1 - \sqrt{\dfrac{5}{2}} \right]$, (b) $x \in \{4, 5\}$ **119.** R   **120.** $(0, 1)$ **121.** $x \in (2, \infty)$

122. $(-2, -1) \cup (-1, 0) \cup (1, 2)$ **123.** $x \in \{-1/2\}$ **125.** $(1, 2) \cup (2, 5/2)$

127. $g(x) \in [-2, 3]$ or $[-2, 3)$.   **128.** $x \in \left(e^{\left(2n + \frac{1}{4} \right)\pi}, e^{\left(2n + \frac{5}{4} \right)\pi} \right)$ **129.** $\left(-\infty, \dfrac{1 + 3\ln\pi}{2 + \ln\pi} \right)$

130. R   **131.** $\left[2K\pi, 2K\pi + \dfrac{\pi}{2} \right]$

132. $R - \{(1, 2) \cup \{2, 3, 4, 5, 6, 7, 8, 9, 10\} \cup (10, 11)\}$ **134.** $D_f = R, R_f = [0, 2]$

135. $b \in (-\infty, -\sqrt{626}) \cup (\sqrt{626}, \infty)$ **136.** $D_f = (-4, -3) \cup (8, \infty)$ **137.** $R - \left\{ -\dfrac{1}{2}, 0 \right\}$