

BLUE BOOK

p. 88 (3-5, 11-250, 26, 27, 31, 33, 35, 47, 49, 57-670) / p. 89 (16-28e)

3. $\lim_{x \rightarrow 0} \frac{\sqrt[4]{x+2} - 2}{x}$

-0.1	-0.01	-0.001	0.001	0.01	0.1
-0.26	-0.25	-0.250	-0.2499	-0.249	-0.24

4. $\lim_{x \rightarrow 0} \frac{4(\sqrt{x+2} - \sqrt{2})}{x} \approx 1.414$

5. a) $x \rightarrow 0$ $y \rightarrow -2$
 b) $x \rightarrow -1$ $y \rightarrow -3$

11. $\lim_{t \rightarrow 4} \sqrt{4+t} = \sqrt{6}$

13. $\frac{1}{t-2} = \frac{-1}{4}$

15. $\lim_{x \rightarrow 4} \frac{\sqrt{x-2}}{(\sqrt{x-2})(\sqrt{x+2})} = \frac{1}{4}$

17. $\lim_{x \rightarrow 0} \frac{\frac{1-x-1}{x+1}}{\frac{x}{x+1}} = \frac{-x}{x(x+1)} = \frac{-1}{1}$

19. $\lim_{x \rightarrow -5} \frac{(x+5)(x^2-9x+25)}{(x+5)} = 25 + 25 + 25 = 75$

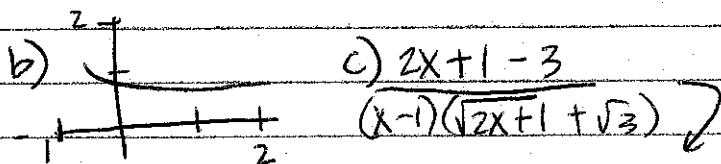
21. $\lim_{x \rightarrow 0} \frac{(1-\cos x)(1+\cos x)}{\sin x(1+\cos x)} = \frac{1-\cos^2 x}{\sin x(1+\cos x)} = \frac{\sin x}{1+\cos x} = 0$

23. $\lim_{\Delta x \rightarrow 0} \frac{\sin(\pi/6 + \Delta x) - (1/2)}{\Delta x} = \frac{\sin(\pi/6)\cos(\Delta x) + \cos(\pi/6)\sin(\Delta x) - (1/2)}{\Delta x}$
 $= \frac{\frac{1}{2}\cos(\Delta x) + \frac{\sqrt{3}}{2}\sin(\Delta x) - 1/2}{\Delta x} = \frac{\frac{1}{2}(\cos(\Delta x) - 1) + \frac{\sqrt{3}}{2}\sin(\Delta x)}{\Delta x}$
 $= 0 + \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$ IDENT: $\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$

25. $\lim_{x \rightarrow c} \left[\frac{-3}{x} \left(\frac{x}{3} \right) \right] = \frac{-1}{2}$

26. $\lim_{x \rightarrow c} \left[\frac{-3}{x} + 2 \left(\frac{x}{3} \right) \right] = \frac{-9}{12} + \frac{16}{12} = \frac{7}{12}$

27. a) 1.1 | 1.01 | 1.001 | 1.0001
 .908 | .914 | .9173 | .9173



c) $= \frac{2(x-1)}{(x-1)(\sqrt{2x+1} + \sqrt{3})} = \frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}}$ OR $\frac{\sqrt{3}}{3}$

$$31. \lim_{x \rightarrow 3^-} \frac{-(x+3)}{(x-3)} = \boxed{-1}$$

$$33. \begin{cases} 0 & x \leq 2 \\ 0 & x > 2 \end{cases} \quad \boxed{f(x) \rightarrow 0}$$

$$35. \begin{cases} 2 & t < 1 \\ 1 & t \geq 1 \end{cases} \quad \boxed{\text{DNE}}$$

$$47. \begin{cases} 5 = cx + 6 \\ -1 = c(2) \end{cases} \quad \boxed{c = -\frac{1}{2}}$$

$$49. \begin{cases} f(1) = -1 \\ f(2) = 13 \end{cases} \quad \therefore \text{THERE EXISTS A ZERO IN } [1, 2]$$

$$57. \frac{2x^2 + x + 1}{x + 2} \quad \downarrow \quad \boxed{-\infty}$$

$$59. \frac{1}{(x^2 - x + 1)} = \boxed{\sqrt{3}}$$

$$61. \quad \uparrow \quad \boxed{\infty}$$

$$63. \quad \boxed{-\infty}$$

$$65. \quad \boxed{\frac{4}{5}}$$

$$67. \frac{1}{x \sin 2x} = \boxed{-\infty}$$

P. 199 (14-28e)

$$16. \begin{cases} a) \lim_{x \rightarrow \infty} = 0 \\ b) = -\frac{2}{3} \\ c) = \text{DNE } (-\infty) \end{cases}$$

$$18. \begin{cases} a) = 0 \\ b) = 5/4 \\ c) = \text{DNE } (\infty) \end{cases}$$

$$20. \quad 1/3$$

$$22. \quad 4$$

$$24. \quad -\infty$$

$$26. \quad -1$$

$$28. \quad 3$$

$$\text{FOR } x < 0 \quad x = -\sqrt{x^2}$$