21.

t	-0.5	-0.1	-0.01	-0.001	-0.0001
	1.83583	3.93469	4.87706	4.98752	4.99875

t	0.5	0.1	0.01	0.001	0.0001
	22.365	6.48721	5.12711	5.01252	5.00125

Guess:5.

29. $-\infty$

37. ∞

2. (a) 2
   (b) DNE. *Note.* It is NOT sufficient to say this value DNE since $g(x)$ has no limit at 1. Why?
   (c) 0
   (d) DNE. *Note.* It is NOT sufficient to say this value DNE since $g(x)$ has limit 0 at -1. Why?
   (e) 16
   (f) 2

5. $\lim\limits_{t\to-2} \frac{t^4-2}{2t^2-3t+2} = \frac{\lim\limits_{t\to-2}(t^4-2)}{\lim\limits_{t\to-2}(2t^2-3t+2)} = \frac{\lim\limits_{t\to-2} t^4 - \lim\limits_{t\to-2} 2}{\lim\limits_{t\to-2} 2t^2 - \lim\limits_{t\to-2} 3t + \lim\limits_{t\to-2} 2} = \frac{7}{8}.$

25. $\lim\limits_{t\to0} \frac{\sqrt{1+t}-\sqrt{1-t}}{t} = \lim\limits_{t\to0} \frac{\sqrt{1+t}-\sqrt{1-t}}{t} \cdot \lim\limits_{t\to0} \frac{\sqrt{1+t}+\sqrt{1-t}}{\sqrt{1+t}+\sqrt{1-t}} = \lim\limits_{t\to0} \frac{2t}{t(\sqrt{1+t}+\sqrt{1-t})} = \lim\limits_{t\to0} \frac{2}{\sqrt{1+t}+\sqrt{1-t}} = 1.$

33. (c) $\lim\limits_{x\to0} \frac{x}{\sqrt{1+3x}-1} = \lim\limits_{x\to0} \frac{x}{\sqrt{1+3x}-1} \cdot \lim\limits_{x\to0} \frac{\sqrt{1+3x}+1}{\sqrt{1+3x}+1} = \lim\limits_{x\to0} \frac{x(\sqrt{1+3x}+1)}{3x} = \lim\limits_{x\to0} \frac{\sqrt{1+3x}+1}{3} = \frac{2}{3}.$

43. $\lim\limits_{x\to0.5^-} \frac{2x-1}{|2x^3-x^2|} = \lim\limits_{x\to0.5^-} \frac{2x-1}{-2x^3+x^2} = \lim\limits_{x\to0.5^-} \frac{-1}{x^2} = -4.$

49. (a) $\lim\limits_{x\to2^\pm} \frac{x^2+x-6}{|x-2|} = \lim\limits_{x\to2^\pm} \frac{x^2+x-6}{\pm(x-2)} = \lim\limits_{x\to2^\pm} \pm(x+3) = \pm5.$
    (b) No.

51. (a) -2, DNE, -3.
    (b) n-1, n.
    (c) $a \notin \mathbb{Z}$.

57. $\lim\limits_{x\to1} \frac{f(x)-8}{x-1} \cdot \lim\limits_{x\to1}(x-1) = \lim\limits_{x\to1}(f(x)-8) = 0 \Rightarrow \lim\limits_{x\to1} f(x) = 8.$

61. $f(x) = H(x)$, $g(x) = H(-x)$, where $H(x)$ is the Heaviside function.

62. $\lim\limits_{x\to2} \frac{\sqrt{6-x}-2}{\sqrt{3-x}-1} \cdot \lim\limits_{x\to2} \left(\frac{\sqrt{6-x}+2}{\sqrt{6-x}+2} \frac{\sqrt{3-x}+1}{\sqrt{3-x}+1} \right) = \lim\limits_{x\to2} \frac{(2-x)(\sqrt{3-x}+1)}{(2-x)(\sqrt{6-x}+2)} = \lim\limits_{x\to2} \frac{\sqrt{3-x}+1}{\sqrt{6-x}+2} = \frac{1}{2}.$