28. $\lim_{x\to 0} \dfrac{\frac{1}{2+x} - \frac{1}{2}}{x} \cdot \dfrac{(2)(2+x)}{(2)(2+x)} = \lim_{x\to 0} \dfrac{2-(2+x)}{x(2)(2+x)} = \lim_{x\to 0} \dfrac{-x}{2x(2+x)} = \lim_{x\to 0} \dfrac{-1}{2(2+x)}$

$= \boxed{\dfrac{-1}{4}}$

30. $\lim_{x\to 0} \dfrac{\sin 2x}{x} \cdot \dfrac{2}{2} = \lim_{x\to 0} 2 \cdot \dfrac{\sin 2x}{2x} = 2 \cdot 1 = \boxed{2}$

31. $\lim_{x\to 0} \dfrac{\sin x}{\underset{x(2x-1)}{2x^2 - x}} = \lim_{x\to 0} \dfrac{\sin x}{x} \cdot \dfrac{1}{2x-1} = 1 \cdot \dfrac{1}{-1} = \boxed{-1}$

33. $\lim_{x\to 0} \dfrac{\sin^2 x}{x} = \lim_{x\to 0} \dfrac{\sin x}{x} \cdot \sin x = 1 \cdot 0 = \boxed{0}$

43. see 2.1 day 1

44. a) T
c) F
e) T
g) T
h) T
i) T

b) F
d) T
f) T

55. a) $\lim_{x\to 4} (g(x)+3) = \lim_{x\to 4} g(x) + \lim_{x\to 4} 3$

$= 3 + 3 = \boxed{6}$

b) $\lim_{x\to 4} x f(x) = \lim_{x\to 4} x \cdot \lim_{x\to 4} f(x)$

$= 4 \cdot 0 = \boxed{0}$

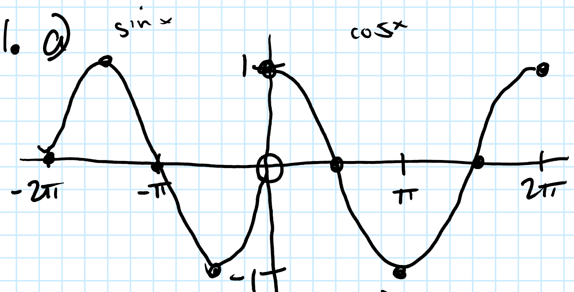
c) $\lim_{x\to 4} g^2(x) = (\lim_{x\to 4} g(x))^2 = (3)^2 = \boxed{9}$

d) $\lim_{x\to 4} \dfrac{g(x)}{f(x)-1} = \dfrac{3}{0-1} = \boxed{-3}$

56. a) 4
b) $-21$
c) $-12$
d) $-\dfrac{7}{3}$

61. a) $\sin x$ $\cos x$

61. a)




b) $(-2\pi, 0) \cup (0, 2\pi)$ $\lim_{x\to c} f(x)$ exists

c) $2\pi$ L.H.

d) $-2\pi$ R.H.

71. True - definition of limit.

72. True : $\lim_{x\to 0} \frac{x+\sin x}{x} = \lim_{x\to 0} \frac{x}{x} + \lim_{x\to 0} \frac{\sin x}{x}$

$= 1 + 1 = \boxed{2}$

73. C

74. B

75. E

76. C