

1) $\lim_{x \rightarrow -3} (3x+2) = -7$

2) $\lim_{x \rightarrow 1} (3x^3 - 2x^2 + 4) = 5$

3) $\lim_{x \rightarrow 3} \frac{\sqrt{x-1}}{x-4} = -\sqrt{2}$

4) $\lim_{x \rightarrow 2} \cos \frac{\pi x}{3} = \cos \frac{2\pi}{3} = \boxed{-\frac{1}{2}}$

5) $\lim_{x \rightarrow 1} \sin \frac{\pi x}{2} = \sin \frac{\pi}{2} = \boxed{1}$

6) $\lim_{x \rightarrow 0} \sec 2x = \sec 0 = \boxed{1}$

7) $\lim_{x \rightarrow 3} \frac{x^2-9}{x+3} = \boxed{0}$

8) $\lim_{x \rightarrow 0} \frac{3x^2-2x+1}{x} \text{ DNE}$

9) $\lim_{x \rightarrow 1} \frac{5x^2+6x+10}{8x-1} = \boxed{3}$

10) $\lim_{x \rightarrow 0} \frac{2+5x+\sin x}{5\cos x} = \boxed{\frac{2}{5}}$

11) $f(x) = \begin{cases} 5-x, & x < 3 \\ \frac{3x}{4}+1, & x > 3 \end{cases}$

$$\lim_{x \rightarrow 3^-} (5-x) = 2 \neq \lim_{x \rightarrow 3^+} \left(\frac{3x}{4}+1\right) = \frac{13}{4}$$

$$\lim_{x \rightarrow 3} f(x) \text{ DNE}$$

12) a) $\lim_{x \rightarrow 2^-} f(x) = 3$

b) $\lim_{x \rightarrow 2^+} f(x) = 3$

c) $\lim_{x \rightarrow 2} f(x) = 3$

d) $f(2) = \emptyset$

13) a) $\lim_{x \rightarrow 4^-} f(x) = 15$

b) $\lim_{x \rightarrow 4^+} f(x) = 3$

c) $\lim_{x \rightarrow 4} f(x) \text{ DNE}$

d) $f(4) = 3$