1.[1]
$$\lim_{x \to 3} \frac{x^2 - 5x + 6}{x^2 - 8x + 15}$$
 2.[3] $\lim_{x \to \infty} \frac{(x+1)(x^2+1)....(x^n+1)}{[(nx)^n + 1]^{n/2 + 1/2}}$

$$3.[2] \lim_{x \to -1} \frac{x^3 - 2x - 1}{x^5 - 2x - 1} \qquad 4.[2] \lim_{x \to 1} \frac{x + x^2 + \dots + x^n - n}{x - 1}$$

$$5.[3] \lim_{x \to 1} \frac{x^{100} - 2x + 1}{x^{50} - 2x + 1} \qquad 6.[4] \lim_{n \to \infty} \left(\frac{1^3 + 2^3 + \dots + n^3}{n^3} - \frac{n}{4} \right)$$

$$7.[1] \lim_{x \to \infty} \frac{\sqrt{x + \sqrt{x + \sqrt{x}}}}{\sqrt{x + 1}} \quad 8.[2] \lim_{x \to -2} \frac{(x - 6)^{1/3} + 2}{x^3 + 8}$$

9.[2]
$$\lim_{x \to 0} \frac{(1+x)^{1/2} - (1-x)^{1/2}}{(1+x)^{1/3} - (1-x)^{1/3}}$$
 10.[3] $\lim_{x \to \infty} [\sqrt{(x+a)(x+b)} - x]$

11.[3]
$$\lim_{x \to 1} \left(\frac{3}{1 - x^{1/2}} - \frac{2}{1 - x^{1/3}} \right)$$

12.[1]
$$\lim_{x \to 0} \frac{\sin 5x - \sin 3x}{\sin x}$$
 13.[2] $\lim_{x \to 0} \frac{1 + \sin x - \cos x}{1 + \sin px - \cos px}$

$$14.[1] \lim_{x \to 1} (1-x) \operatorname{tg} \frac{\pi x}{2} \qquad 15.[2] \lim_{x \to 0} \frac{(1+\operatorname{tg} x)^{1/2} - (1+\sin x)^{1/2}}{x^3}$$

$$16.[2] \lim_{x \to 0} (\cos x)^{1/2} - (\cos x)^{1/3} \qquad 17.[1] \lim_{x \to 0} (x+2)^{x^2}$$

14.[1]
$$\lim_{x \to 1} (1-x) \operatorname{tg} \frac{\pi x}{2}$$
 15.[2] $\lim_{x \to 0} \frac{(1+\operatorname{tg} - x)^{1/2} - (1+\operatorname{tg} - x)^{1/2}}{x^3}$ 16.[3] $\lim_{x \to 0} \frac{(\cos x)^{1/2} - (\cos x)^{1/3}}{\sin^2 x}$ 17.[1] $\lim_{x \to \infty} \left(\frac{x+2}{2x-1}\right)^{x^2}$ 18.[1] $\lim_{x \to \infty} \left(\frac{x+a}{x-a}\right)^x$ 19.[3] $\lim_{x \to 0} \left(\frac{\cos x}{\cos 2x}\right)^{1/x^2}$ 20.[2] $\lim_{x \to \infty} x \left(\ln(x+1) - \ln x\right)$ 21.[2] $\lim_{x \to \infty} \frac{\ln \cos ax}{x}$ 22.[2] $\lim_{x \to \infty} \frac{a^x - x^a}{x}$ 23.[3] $\lim_{x \to 0} \frac{a^x - x^a}{x}$ 23.[3] $\lim_{x \to 0} \frac{a^x - x^a}{x}$

18.[1]
$$\lim_{x \to a} \left(\frac{x+a}{x-a}\right)^x$$
 19.[3] $\lim_{x \to a} \left(\frac{\cos x}{\cos 2x}\right)^{1/x}$

20.[2]
$$\lim_{x \to \infty} x (\ln(x+1) - \ln x)$$

21.[2]
$$\lim_{x\to 0} \frac{\ln \cos ax}{\ln \cos bx}$$
 22.[2] $\lim_{x\to a} \frac{a^x - x^a}{x - a}$ 23.[3] $\lim_{x\to a} \frac{x^x - a^a}{x - a}$

24.[3]
$$\lim_{x \to 0} (x + e^x)^{1/x}$$
 25.[3] $\lim_{x \to \infty} n(x^{1/n} - 1)$

$$21.[2] \lim_{x \to 0} \frac{\ln \cos ax}{\ln \cos bx} \quad 22.[2] \lim_{x \to a} \frac{a^x - x^a}{x - a} \quad 23.[3] \lim_{x \to a} \frac{x^x - a^a}{x - a}$$

$$24.[3] \lim_{x \to 0} (x + e^x)^{1/x} \quad 25.[3] \lim_{n \to \infty} n(x^{1/n} - 1)$$

$$26.[3] \lim_{n \to \infty} \left(\frac{a^{1/n} + b^{1/n}}{2}\right)^n \quad 27.[4] \lim_{x \to 0} \left(\frac{a^x + b^x + c^x}{3}\right)^{1/x}$$

$$28.[3] \lim_{x \to 0} \frac{e^{\sin 2x} - e^{\sin x}}{\cot x} \quad 29.[4] \lim_{h \to 0} \frac{\arctan (x + h) - \arctan x}{h}$$

28.[3]
$$\lim_{x\to 0} \frac{e^{\sin 2x} - e^{\sin x}}{\tan x}$$
 29.[4] $\lim_{h\to 0} \frac{\arctan(x+h) - \arctan x}{h}$

30.[1]
$$\lim_{x \to \infty} \left((1 + x + x^2)^{1/2} - (1 - x + x^2)^{1/2} \right)$$