

$$\lim_{x \rightarrow 1} \frac{5x^2 - 7x + 3}{5x^2 - 11x + 3} = \frac{(5x-3)(x-1)}{(5x-3)(x-1)} = \frac{1}{1}$$

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$$\lim_{x \rightarrow 0} \frac{-3x+1-3x-1}{x} = \frac{-6x}{x} = -6$$

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

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$$\lim_{x \rightarrow 2} \frac{x - \sqrt{2x}}{x^2 - x - 6} \times \frac{x + \sqrt{2x}}{x + \sqrt{2x}} = \frac{x^2 - 2x}{(x-3)(x+3)(x+\sqrt{2x})} = \frac{x(x/2)}{(x-3)(x+3)(x+\sqrt{2x})} = \frac{2}{18} = \frac{1}{9}$$

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$$\lim_{x \rightarrow 1} \frac{1 - \sqrt{x}}{x - \sqrt{1-x}} \Rightarrow \frac{1-x}{x-\omega+k} \times \frac{x}{x} = \frac{-(x-1)}{(x-1)} \times 1 = -1$$

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$$\lim_{x \rightarrow \infty} \frac{\sqrt{x+1} - \sqrt{x}}{\sqrt{x+1} - \sqrt{x}} \rightarrow x \frac{\frac{1}{2\sqrt{x}}}{\frac{1}{2\sqrt{x}}} = \frac{x+1-\sqrt{x}}{2\sqrt{x}} \times \frac{\sqrt{x}}{\sqrt{x}} = \frac{x+1-\sqrt{x}}{2\sqrt{x}} \times \frac{\sqrt{x}}{\sqrt{x}} \rightarrow \frac{x}{2\sqrt{x}} \times \frac{\sqrt{x}}{\sqrt{x}}$$

$$= \left[\frac{\sqrt{x}}{2} \right]$$

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$$\lim_{x \rightarrow \infty} \frac{\sqrt{x+1} - \sqrt{x}}{\sqrt{x} - 1} \xrightarrow{\text{hop}} \frac{\frac{1}{2\sqrt{x}}}{\frac{1}{2\sqrt{x}}} = \frac{\frac{1}{2}}{\frac{1}{2}} = \frac{\sqrt{x}}{\sqrt{x}} = \left[\frac{\sqrt{x}}{\sqrt{x}} \right]$$

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$$\lim_{x \rightarrow \pi} \frac{1 + \cos x}{\sin x} \xrightarrow{\text{hop}} \frac{-\sin x}{\cos x} = \frac{-\sin \pi}{\cos \pi} = \left[\frac{0}{-1} \right]$$

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$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan x}{\sin x + \cos x} \xrightarrow{\text{hop}} \frac{-\frac{1}{\cos x}}{\sin x + \cos x} = \frac{-1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$$

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$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\tan x - 1}{\cos(x)} \xrightarrow{\text{hop}} \frac{\frac{1}{\cos x}}{-\sin(x)} = \frac{\tan \frac{1}{\cos x}}{-\sin(x)} = \frac{-1 \times \frac{1}{\cos x}}{-(-1)} = \left[\frac{1}{\cos x} \right]$$

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