

$$1) \lim_{x \rightarrow 8} x^2 - 5x - 11$$

$$= (8)^2 - 5(8) - 11$$

$$= 13$$

as the x approaches 8,
the limit approaches 13

15
15

$$2) \lim_{x \rightarrow 5} \frac{x+3}{x^2-15}$$

$$= \frac{(5)+3}{(5)^2-15}$$

$$= \frac{8}{10} = \frac{4}{5}$$

as the x approaches 5,
the limit approaches $\frac{4}{5}$

$$3) \lim_{x \rightarrow 5} \frac{x-5}{x^2-25}$$

$$= \frac{x-5}{(x+5)(x-5)}$$

$$= \frac{1}{x+5}$$

$$= \frac{1}{(5)+5} = \frac{1}{10}$$

as the x approaches 5,
the limit approaches $\frac{1}{10}$

$$4) \lim_{x \rightarrow 0} \frac{3x}{x^2+2x}$$

$$= \frac{3x}{x(x+2)}$$

$$= \frac{3}{x+2}$$

$$= \frac{3}{0+2} = \frac{3}{2}$$

as the x approaches 0,
the limit approaches $\frac{3}{2}$

$$5) \lim_{x \rightarrow 1} \frac{x-1}{\sqrt{x}-1}$$

$$= \frac{x-1}{\sqrt{x}-1} \cdot \frac{\sqrt{x}+1}{\sqrt{x}+1}$$

$$= \frac{(x-1)(\sqrt{x}+1)}{x-1}$$

$$= \frac{x-1}{\sqrt{x}-1}$$

$$= \frac{\sqrt{(1)-1}}{\sqrt{(1)-1}}$$

$$= \frac{\sqrt{0}}{\sqrt{0}} = 0$$

as the x approaches 1,
the limit approaches 0