# Answer key

**The method: Limits**

Put the number in. If you get 0/0, factor and cancel first. As x → ∞, compare the highest powers.

$$\lim_{x \to 1} -x^2 + x + 2 = 2$$

$-(1)^2 + (1) + 2 = 2$ a polynomial: put the number in

$$\lim_{x \to \infty} \frac{7x^2 + x - 9}{3x^2 - 5} = \frac{7}{3}$$

the same degree: divide the leading coefficients

$$\lim_{x \to -5} \frac{x^2 + 9x + 20}{x + 5} = -1$$

putting in $x = -5$ gives 0/0 so factor first

$\frac{(x + 5)(x + 4)}{x + 5} = x + 4$ cancel $(x + 5)$

$-5 - (-4) = -1$ now put in $x = -5$

**Problems 1 and 2 worked out · Version 0A**

$$\lim_{x \to -4} \frac{x^2 + 5x + 4}{x + 4} = -3$$

putting in $x = -4$ gives 0/0 so factor first

$\frac{(x + 4)(x + 1)}{x + 4} = x + 1$ cancel $(x + 4)$

$-4 - (-1) = -3$ now put in $x = -4$

$$\lim_{x \to \infty} \frac{3x - 5}{x - 6} = 3$$

the same degree: divide the leading coefficients

**Limits · Version 0A**

1) $-3$ 2) 3 3) 0 4) 0 5) 7 6) 9 7) $-1$ 8) 1

9) $-\frac{3}{4}$ 10) $\frac{1}{7}$ 11) 0 12) $\frac{1}{5}$ 13) 4 14) 0 15) $-1$

16) $-15$ 17) 2 18) $\frac{3}{4}$ 19) $\frac{9}{7}$ 20) 2 21) $-\frac{8}{5}$
22) $-31$