Solutions

Each answer shows the steps, then the **result**.

2.1

- a linear function

2.2

- a rational function

2.3

- quadratic

3.1 A

- linear.

3.2 B

- domain of validity and assumptions.

3.3

(a)

- linear

(b)

- that the constant yearly increase continues unchanged

(c)

- extrapolating far beyond the 5 years of data may be unreliable

3.4

(a)

- $0 < x < 20$ (both lengths must be positive)

(b)

- area is two-dimensional: it is the product of two lengths that are each linear in x

(c)

- the zeros are $x = 0$ and $x = 20$, so the vertex is at $x = 10$
- $A(10) = 10(20) =$ **200** m^2

3.5 C

- constant nth differences mean a polynomial of degree n

3.6

(a)

- $C(g) = 10$ for $0 \le g \le 2$
- $C(g) = 10 + 5(g - 2)$ for $g > 2$

(b)

- for example: the prices stay the same every month; data beyond 2 GB is charged in proportion, not in whole GB

3.7

- degree **4**: a polynomial of degree $n - 1$ or less fits n points with distinct inputs