**1** *Let $g$ be the function such that*

$$g(x) = \frac{1}{x^2}$$

*for all possible $x$. Is $g$ even, odd, or neither? (Either show what calculation you make to decide this, or draw a graph that shows your answer.)*

Since

$$g(-x) = \frac{1}{(-x)^2} = \frac{1}{x^2}$$

and this is the same as $g(x)$, it follows that $g$ is **even**.

**2** *Let $h$ be the function given by*

$$h(x) = x^2 - 2x.$$

*What is the average rate of change of $h$ from 2 to 4? (Show what numerical calculation you make or what equation you solve.)*

First,

$$h(2) = (2)^2 - 2(2) = 0;$$

next,

$$h(4) = (4)^2 - 2(4) = 8.$$

Therefore, the average rate of change is

$$\frac{h(4) - h(2)}{(4) - (2)} = \frac{8 - 0}{4 - 2} = \frac{8}{2} = 4.$$

**3** *Let $f$ be the function shown on the screen.*

*a* *How many local minima does $f$ have?*

It has 3 local minima. (See $(-8, -4)$, $(0, 0)$, and $(5, 0)$ on the graph.)

*b* *For each local minimum of $f$, state* where *it is and* what *it is.*

One local minimum is at $-8$; it is $-4$. Another local minimum is at 0; it is 0. The last local minimum is at 5; it is also 0.

*c* **Extra credit:** *Are any of these local minima absolute? which?*

Yes, the local minimum at $-8$ is absolute; the absolute minimum of $h$ is $-4$.