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.