

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.2

Math 1090

FALL 2009

SOLUTIONS

1. (a) $f(0) = \frac{5}{2} \cdot 0 - 3 = 0 - 3 = -3$

(b) $f(1) = \frac{5}{2} \cdot 1 - 3 = \frac{5}{2} - 3 = \frac{5}{2} - \frac{6}{2} = -\frac{1}{2}$

(c) $f(-1) = \frac{5}{2} \cdot (-1) - 3 = -\frac{5}{2} - 3 = -\frac{5}{2} - \frac{6}{2} = -\frac{11}{2}$

Note that you should *not* write your answer here as $-5\frac{1}{2}$. It is not considered proper to use “mixed fractions” such as these in mathematics.

(d) $f(-2) = \frac{5}{2} \cdot (-2) - 3 = -5 - 3 = -8$

(e) $f(10) = \frac{5}{2} \cdot 10 - 3 = 25 - 3 = 22$

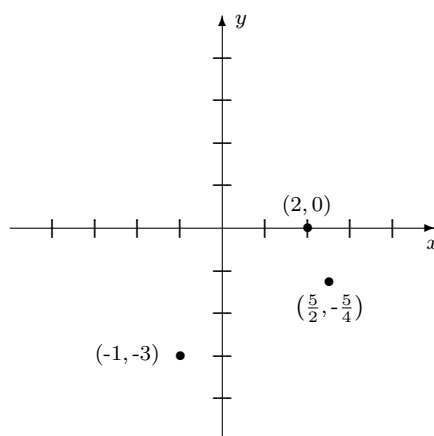
(f) $f\left(-\frac{1}{10}\right) = \frac{5}{2} \cdot \left(-\frac{1}{10}\right) - 3 = -\frac{1}{4} - 3 = -\frac{1}{4} - \frac{12}{4} = -\frac{13}{4}$

2. (a) $g(2) = 2 \cdot (2 - 2) = 2 \cdot 0 = 0$, so this corresponds to the point $(2, 0)$

(b) $g(-1) = (-1) \cdot (2 - (-1)) = (-1) \cdot 3 = -3$, so this corresponds to the point $(-1, -3)$

(c) $g\left(\frac{5}{2}\right) = \frac{5}{2} \cdot \left(2 - \frac{5}{2}\right) = \frac{5}{2} \cdot \left(\frac{4}{2} - \frac{5}{2}\right) = \frac{5}{2} \cdot \left(-\frac{1}{2}\right) = -\frac{5}{4}$, so this corresponds to the point $\left(\frac{5}{2}, -\frac{5}{4}\right)$

We plot these three points below.



3. (a) This graph passes the Vertical Line Test, so it is the graph of a function.

- (b) This graph fails the Vertical Line Test. Any line drawn through the righthand part of the Cartesian plane will pass through the graph twice. Hence it is not the graph of a function.
- (c) This graph fails the Vertical Line Test. For instance, a line drawn down the middle of the Cartesian plane (along the y -axis) will pass through the graph twice. Hence it is not the graph of a function.
- (d) This graph passes the Vertical Line Test, so it is the graph of a function.
- (e) This graph passes the Vertical Line Test, so it is the graph of a function.