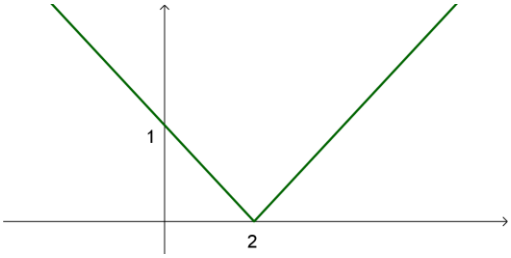
Section 3: The modulus function

Solutions to Exercise level 2

1. (i)



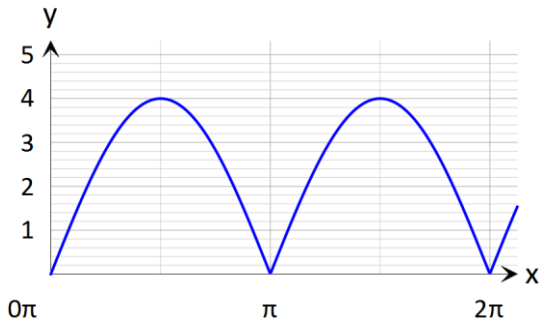
(ii) $\frac{1}{2}x - 1 = 3$ $\quad$ $\frac{1}{2}x - 1 = -3$

$\frac{1}{2}x = 4$ $\quad$ $\frac{1}{2}x = -2$

$x = 8$ $\quad$ $x = -4$

(iii) $|x - 2| \leq 6$

2. (i)



(ii) 4

3. $|3x - 2| > 1$

$3x - 2 = 1$ $\quad$ $3x - 2 = -1$

$3x = 3$ $\quad$ $3x = 1$

$x = 1$ $\quad$ $x = \frac{1}{3}$

$x > 1, \quad x < \frac{1}{3}$

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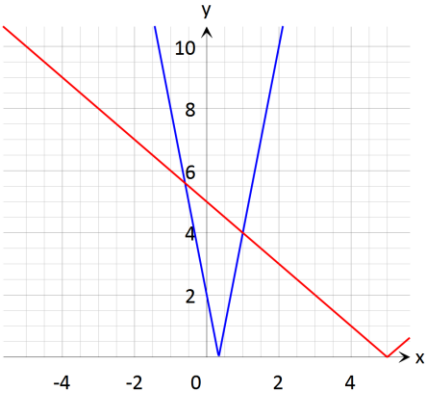
4. (i) and (ii)



(iii) $|6x-2|=|x-5|$

$6x-2=x-5$ $\quad 6x-2=5-x$

$5x=-3$ $\quad 7x=7$

$x=-\frac{3}{5}$, $\quad x=1$

$-\frac{3}{5}<x<1$

(iv) $-\frac{3}{5}<x<1$

$-\frac{4}{5}<x-\frac{1}{5}<\frac{4}{5}$

$-4<5x-1<4$

$|5x-1|<4$