Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

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

2.1

$3x + 2 = 7$, $x = \frac{5}{3}$; $3x + 2 = -7$, $x = \mathbf{-3}$

2.2

for $x < 3$: $3 - x < 2x$; critical value $x = 1$; $\mathbf{x > 1}$

3.1

(a) $f(-x) = (-x)^2 - 4 = x^2 - 4 = f(x)$, so f is even

(b) $x^2 - 4 = 3$ gives $x = \pm\sqrt{7}$; $x^2 - 4 = -3$ gives $x = \pm 1$

(c) $x = \pm\sqrt{8}$ and $x = 0$; **3** solutions

3.2

(a) $\dfrac{x+1}{x-2} - 2 \geq 0$; $\dfrac{5-x}{x-2} \geq 0$; critical values 2 and 5; $\mathbf{2 < x \leq 5}$

(b) $x = 1$; $x = 3$

(c) $x^2 - 4x + 3$ has its minimum -1 at $x = 2$; local maximum of h at $(\mathbf{2}, \mathbf{-1})$

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