

Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 A – Difference of squares gives $(x-4)(x+4)$. B loses the other factor $x+4$; C does not result from cancellation of whole factors.

Correct response linked to the given case.

2.2 A – The principal root is $|x|$. B violates the nonnegative principal-root convention; C is the squared value rather than its root.

Correct response linked to the given case.

2.3 7 – The two x terms contribute $5x+2x$.

Correct response linked to the given case.

2.4 False – Different expressions can share one value.

Correct response linked to the given case.

3.1 Factor numerator $x(x-4)$ and denominator $(x-4)(x+4)$. The original domain excludes $x = 4, -4$. Cancellation gives $F(x) = x/(x+4)$ for $x \neq 4, -4$. The latter formula alone permits 4, where it gives $1/2$, while $F(4)$ is undefined.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence
. Accurate conditions, checks or qualification.

3.2 Expansion gives $3x^2 + 15x - 2x - 10 = 3x^2 + 13x - 10$, so the coefficient is 13. The root is $|x-5|$; at $x = 1$, it is $|-4| = 4$, not -4 or 16.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.

3.3 At $x = 3$ the outputs are 9 and 6, so one matching test is not proof. Solve $x^2 = 2x$ as $x(x-2) = 0$, giving only $x = 0, 2$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.