

Quiz 2 MTH140 Fall 2026

Sunday, September 13, 2026

8:40 AM

Solve $\frac{4}{q-3} - \frac{2}{q+3} = \frac{5}{q^2-9}$ ← forbidden for $\left. \begin{array}{l} q-3=0 \\ q+3=0 \\ q^2-9=0 \end{array} \right\} \rightarrow$ forbidden for $q=3, -3$

Notice that $q^2-9 = (q-3)(q+3)$, so the problem
↑
difference of squares
can be written as

$$\frac{4}{q-3} - \frac{2}{q+3} = \frac{5}{(q-3)(q+3)}$$

Now multiply by the common denominator $(q-3)(q+3)$ to get

$$\left(\frac{4}{q-3} - \frac{2}{q+3} \right) (q-3)(q+3) = \left(\frac{5}{\cancel{(q-3)(q+3)}} \right) \cancel{(q-3)(q+3)}$$

$$\left(\frac{4}{\cancel{q-3}} \right) \cancel{(q-3)}(q+3) - \left(\frac{2}{\cancel{q+3}} \right) (q-3)\cancel{(q+3)} = 5$$
$$\widehat{4(q+3)} - \widehat{2(q-3)} = 5$$

collect like terms

$$4q + 12 - 2q + 6 = 5$$
$$\rightarrow 2q + 18 = 5$$

subtr 18 $\rightarrow 2q = -13$

div 2 $\rightarrow q = -\frac{13}{2}$ ← not forbidden, so it is ok