

S 2.3 # 33 (#16 online)

$$x^2 - \frac{3}{4}x - \frac{7}{64} = 0$$

M1

$$a = 1, b = -\frac{3}{4}, c = -\frac{7}{64}$$

$$b^2 - 4ac = \left(-\frac{3}{4}\right)^2 - 4(1)\left(-\frac{7}{64}\right)$$

$$= \frac{9}{16} + \frac{7}{16} = \frac{16}{16} = 1$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{\frac{3}{4} \pm \sqrt{1}}{2(1)} = \frac{\frac{3}{4} \pm 1}{2}$$

$$= \frac{\frac{3 \pm 4}{4}}{2} = \frac{3 \pm 4}{8} \rightarrow \begin{matrix} \frac{7}{8} \\ -\frac{1}{8} \end{matrix}$$

M3

$$x^2 - \frac{3}{4}x = \frac{7}{64}$$

$$x^2 - \frac{3}{4}x + \left(\frac{3}{8}\right)^2 = \frac{7}{64} + \frac{9}{64}$$

$$\left(x - \frac{3}{8}\right)^2 = \frac{16}{64} = \frac{1}{4}$$

$$x - \frac{3}{8} = \pm \sqrt{\frac{1}{4}} = \pm \frac{1}{2}$$

$$x = \frac{3}{8} \pm \frac{1}{2} = \frac{3 \pm 4}{8} \rightarrow \begin{matrix} \frac{7}{8} \\ -\frac{1}{8} \end{matrix}$$

M2

$$\frac{64x^2 - 48x - 7}{64} = 0$$

- 2(64)
- 2(32)
- 2(16)
- 2(8)
- 2(4)
- 2

Factors of (64)(-7)

that sum to

-48

$$(8)(7)(-8)$$

$$56 - 8 = 48$$

$$-56 + 8 = -48$$

$$64x^2 - 56x + 8x - 7 = 0$$

$$8x(8x - 7) + 1(8x - 7) = 0$$

$$(8x - 7)(8x + 1) = 0$$

$$x = \frac{7}{8} \text{ or } x = -\frac{1}{8}$$