Questions: Completing the square

Tom Coleman

Summary

A selection of questions for the study guide on completing the square.

*Before attempting these questions, it is highly recommended that you read* [*Guide: Completing the square*](../studyguides/completingthesquare.qmd)*.*

## Q1

Express each of the following quadratic expressions in the form $\left(x+p\right)^{2}+q$, where $p,q$ are numbers.

1.1. $ x^{2}−2x+15$.

1.2. $ y^{2}−6y+8$.

1.3. $ x^{2}+8x+20$.

1.4. $ m^{2}−26m+25$

1.5. $ n^{2}+6n+50$.

1.6. $ x^{2}+2x+144$.

1.7. $ h^{2}−3h−3$.

1.8. $ x^{2}+x−3$.

1.9. $ x^{2}−13x+43$.

1.10. $ y^{2}−8y+16$.

1.11. $ x^{2}+13x+9$.

1.12. $ m^{2}+3m+33$.

## Q2

Express each of the following quadratic expressions in the form $a\left(x+p\right)^{2}+q$, where $a,p,q$ are numbers.

2.1. $ 2x^{2}−12x+14$.

2.2. $ 5y^{2}−10y+4$.

2.3. $ 4x^{2}+32x+68$.

2.4. $ 2m^{2}+2m+2$

2.5. $ 3x^{2}−2x+5$.

2.6. $ 4x^{2}−4x+1$.

2.7. $ 2h^{2}−3h+1$.

2.8. $ 3x^{2}+5x+2$.

## Q3

Using your working from Q1 and Q2, solve the following quadratic equations.

3.1. $ y^{2}−6y+8=0$.

3.2. $ m^{2}−26m+25=0$.

3.3. $ x^{2}+8x+20=0$.

3.4. $ 4x^{2}−4x+1=0$.

3.5. $ 4x^{2}+32x+68=0$.

3.6. $ 3x^{2}+5x+2=0$.

[After attempting the questions above, please click this link to find the answers.](../answers/as-completingthesquare.qmd)

## Version history and licensing

v1.0: initial version created 09/24 by tdhc.

[This work is licensed under CC BY-NC-SA 4.0.](https://creativecommons.org/licenses/by-nc-sa/4.0/?ref=chooser-v1)