

Answers: 2D Conic Sections

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Summary

Answers to questions relating to the guide on introduction to 2D conic sections.

These are the answers to [Questions: 2D Conic Sections](#).

Please attempt the questions before reading these answers!

Q1

- 1.1. Ellipse
- 1.2. Circle
- 1.3. Hyperbola
- 1.4. Parabola
- 1.5. Ellipse
- 1.6. Hyperbola
- 1.7. Ellipse
- 1.8. Parabola
- 1.9. Ellipse
- 1.10. Hyperbola

Q2

2.1.

Centre: $(2, -1)$

Radius: 4

2.2.

Centre: $(2, -3)$

Radius: 5

2.3.

Centre: $(-4, 5)$

Radius: $4\sqrt{2}$

2.4.

Centre: $(3, -2)$

Foci: $(3 \pm \sqrt{5}, -2)$

2.5.

Centre: $(-1, 4)$

Foci: $(-1, \pm\sqrt{7}, 4)$

2.6.

Centre: $(1, -2)$

Foci: $(1, -2 \pm \sqrt{5})$

2.7.

Centre: $(1, -3)$

Foci: $(1, -3 \pm \sqrt{7})$

2.8.

Centre: $(3, -1)$

Foci: $(3 \pm \sqrt{3}, -1)$

2.9.

Centre: $(1, 3)$

Foci: $(1 \pm \sqrt{3}, 3)$

2.10.

Centre: $(2, -2)$

Foci: $(2 \pm \sqrt{7}, -2)$

2.11.

Vertex: $(2, 3)$

Focus: $(2, \frac{13}{4})$

Directrix: $y = 3 - \frac{1}{4}$

2.12.

Vertex: $(-1, 2)$

Focus: $(-1, 4)$

Directrix: $y = 0$

2.13.

Vertex: $(2, -3)$

Focus: $(1, -3)$

Directrix: $x = 3$

2.14.

Vertex: $(3, 1)$

Focus: $(3, 2)$

Directrix: $y = 0$

2.15.

Vertex: $(4, -4)$

Focus: $(3, -4)$

Directrix: $x = 5$

2.16.

Centre: $(2, 1)$

Foci: $(2 \pm \sqrt{13}, -1)$

Vertices: $(2 \pm 3, -1)$

2.17.

Centre: $(-1, 3)$

Foci: $(-1, 3 \pm 5)$

Vertices: $(-1, 3 \pm 4)$

2.18.

Centre: $(1, 2)$

Foci: $(1 \pm 5, 2)$

Vertices: $(1 \pm 4, 2)$

2.19.

Centre: $(2, -3)$

Foci: $(2 \pm \sqrt{8}, -3)$

Vertices: $(2 \pm 2, 2)$

2.20.

Centre: $(-3, 2)$

Foci: $(-3, 2 \pm 3)$

Vertices: $(-3, 2 \pm \sqrt{13})$

Version history and licensing

v1.0: initial version created 11/25 by Abigail Carpenter as part of a University of St Andrews VIP project.

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