CHAPTER 12.2

# Ellipses

Multiple-Choice Old Exam Questions

9 questions • 2 topics • options A–E • two questions per page

## Topic 1 | Equation of an Ellipse

*Writing the equation of an ellipse from its foci, vertices or graph • Questions 1–4*

Q **1**

The equation of the ellipse with foci $(-2,\ 7)$ and $(-2,\ 1)$ and minor axis of length $8$ is

**A)** $\frac{(x+2)^2}{16}+\frac{(y-4)^2}{25}=1$

**B)** $\frac{(x-2)^2}{16}+\frac{(y+4)^2}{25}=1$

**C)** $\frac{(x-2)^2}{25}+\frac{(y+4)^2}{16}=1$

**D)** $\frac{(x+2)^2}{25}+\frac{(y-4)^2}{16}=1$

**E)** $\frac{(x+2)^2}{25}+\frac{(y+4)^2}{16}=1$

Q **2**

The equation of the ellipse in standard form with vertices $(-2,\ 4)$ and $(-2,\ -2)$, and passing through $(0,\ 1)$ is

**A)** $\frac{(x+2)^2}{4}+\frac{(y-1)^2}{9}=1$

**B)** $\frac{(x+2)^2}{4}+\frac{(y-1)^2}{25}=1$

**C)** $\frac{(x-2)^2}{4}+\frac{(y-1)^2}{25}=1$

**D)** $\frac{(x+2)^2}{3}+\frac{(y-2)^2}{12}=1$

**E)** $\frac{(x-2)^2}{4}+\frac{(y+1)^2}{9}=1$

Q
**3**

The equation whose graph is shown on the right is equal to

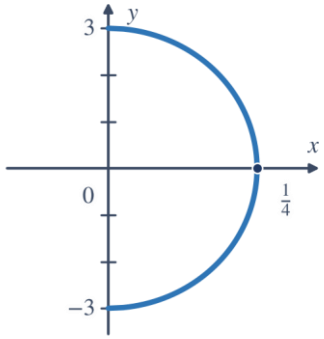
**A)** $4x = \sqrt{1 - \frac{y^2}{9}}$

**B)** $2x = \sqrt{1 - \frac{y^2}{9}}$

**C)** $\frac{x}{4} = \sqrt{1 - \frac{y^2}{9}}$

**D)** $\frac{x}{4} = \sqrt{1 - 9y^2}$

**E)** $4x = \sqrt{1 - 9y^2}$




Q
**4**

The length of the major axis of an ellipse with foci at $(-1, 2)$ and $(3, 2)$ that passes through the point $(3, 5)$ is

**A)** $8$

**B)** $12$

**C)** $4$

**D)** $10$

**E)** $6$

## Topic 2 | Center, Foci, Vertices and Eccentricity

*Finding the center, foci, vertices, eccentricity, domain and range of an ellipse • Questions 5–9*

Q **5**

The eccentricity of the ellipse $8(x-3)^2+(y+1)^2=2$ is

**A)** $\frac{\sqrt{14}}{4}$

**B)** $\frac{\sqrt{7}}{2}$

**C)** $\frac{\sqrt{7}}{4}$

**D)** $\frac{\sqrt{14}}{2}$

**E)** $\frac{\sqrt{18}}{4}$

Q **6**

If $[a,\ b]$ is the domain and $[c,\ d]$ is the range of the equation $4x=\sqrt{1-\frac{y^2}{9}}$, then $a+b+c+d=$

**A)** $\frac{1}{4}$

**B)** $-\frac{1}{4}$

**C)** $0$

**D)** $3$

**E)** $-3$

Q
**7**

If $(h, k)$ is the center of the ellipse $25x^2 + 16y^2 - 150x + 64y - 111 = 0$ and $e$ is its eccentricity, then $h + k + e$ is equal to

**A)** $\frac{8}{5}$

**B)** $-\frac{2}{5}$

**C)** $-\frac{1}{5}$

**D)** $\frac{3}{5}$

**E)** $\frac{7}{5}$

Q
**8**

An ellipse has its center at $(3, -2)$. If its major axis is horizontal of length $10$ and one of the endpoints of the minor axis is $(3, 1)$, then one of its foci is

**A)** $(7, -2)$

**B)** $(-1, 2)$

**C)** $(3, 2)$

**D)** $(-2, 3)$

**E)** $(3, -6)$

Q
**9**

The vertices of the ellipse $2x^2 + 3y^2 - 28x + 30y + 167 = 0$ are

**A)** $(7 + \sqrt{3}, -5)$ and $(7 - \sqrt{3}, -5)$

**B)** $(-7 + \sqrt{3}, -5)$ and $(-7 - \sqrt{3}, -5)$

**C)** $(7, -5 + \sqrt{2})$ and $(7, -5 - \sqrt{2})$

**D)** $(-7, -5 + \sqrt{2})$ and $(-7, -5 - \sqrt{2})$

**E)** $(7 + \sqrt{3}, 5)$ and $(7 - \sqrt{3}, 5)$

# Answer Key

*"Original" shows the question number in the source worksheet.*

| Q | Original | Ans. | Value |
|---|---|---|---|
| **1** | 2 | **A** | $\frac{(x+2)^2}{16}+\frac{(y-4)^2}{25}=1$ |
| **2** | 4 | **A** | $\frac{(x+2)^2}{4}+\frac{(y-1)^2}{9}=1$ |
| **3** | 6 | **A** | $4x=\sqrt{1-\frac{y^2}{9}}$ |
| **4** | 7 | **A** | $8$ |
| **5** | 1 | **A** | $\frac{\sqrt{14}}{4}$ |
| **6** | 3 | **A** | $\frac{1}{4}$ |
| **7** | 5 | **A** | $\frac{8}{5}$ |
| **8** | 8 | **A** | $(7,-2)$ |
| **9** | 9 | **A** | $(7+\sqrt{3},-5)$ and $(7-\sqrt{3},-5)$ |