

Twenty-fourth Set of Homework

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Due: Thursday April 28

Please note: You should fully justify your answers.

Ellipses

1. Sketch the graph of the ellipse with given equation. The graph should correctly reflect the minor and major axis, the center and the foci.

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

(b) $\frac{x^2}{25} + \frac{y^2}{9} = 1$

(c) $\frac{x^2}{64} + \frac{y^2}{100} = 1$

(d) $4x^2 + y^2 = 100$

(e) $16x^2 + 9y^2 = 144$

(f) $39x^2 + 46y^2 = 1764$

2. Find the standard form of the equation of the ellipse that has the given foci F_1 and F_2 and the sum of the distances of a point on the ellipse from the foci is s .

(a) $F_1: (-3, 0), F_2: (3, 0), s = 10$

(b) $F_1: (0, -4), F_2: (0, 4), s = 12$

(c) $F_1: (-1, 0), F_2: (1, 0), s = 4$

(d) $F_1: (0, -5), F_2: (0, 5), s = 14$

(e) $F_1: (-c, 0), F_2: (c, 0), s = 2a$, where a and c are two positive real numbers.