For the next few examples, put your work on graph paper.

EXAMPLE 1 ☑ **Guided Practice**

Graph the ellipse
$144x^2 + 1152x + 25y^2 - 300y - 396 = 0$.

$144(x^2+8x) + 25(y^2-12x) = 396$

$144((x+4)^2-16) + 25((y-6)^2-36) = 396$

$144(x+4)^2 - 2304 + 25(y-6)^2 - 900 = 396$

$144(x+4)^2 + 25(y-6)^2 = 3600$

$\frac{(x+4)^2}{25} + \frac{(y-6)^2}{144} = 1$

EXAMPLE 2 Write Equations Given Characteristics

A. Write an equation for an ellipse with a major axis from (5, –2) to (–1, –2) and a minor axis from (2, 0) to (2, –4).

$C(2,-2)$ ✳

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

EXAMPLE 2 Write Equations Given Characteristics

B. Write an equation for an ellipse with vertices at (3, –4) and (3, 6) and foci at (3, 4) and (3, –2)

$\frac{(x-3)^2}{16} + \frac{(y-1)^2}{25} = 1$

EXAMPLE 2 ☑ **Guided Practice**

Write an equation for an ellipse with co-vertices (–8, 6) and (4, 6) and major axis of length 18.

$\frac{(x+2)^2}{36} + \frac{(y-6)^2}{81} = 1$