

SHOW ALL OF YOUR WORK in the space provided. Take the time to check your work. Circle your final answers. Write neatly.

1. Graph the following function on the given coordinate plane. Show all of your work as stated.

$$f(x) = -x^2 + 2x + 4$$

- a. Find the axis of symmetry.

$$x = \frac{-b}{2a} = \frac{-2}{2(-1)} = \frac{-2}{-2} = 1$$

$x = 1$

- b. Find the vertex.

$$f(1) = -1^2 + 2(1) + 4 = -1 + 2 + 4 = 5$$

$(1, 5)$

- c. Find the y-intercept.

$$f(0) = -0^2 + 2(0) + 4 = 4$$

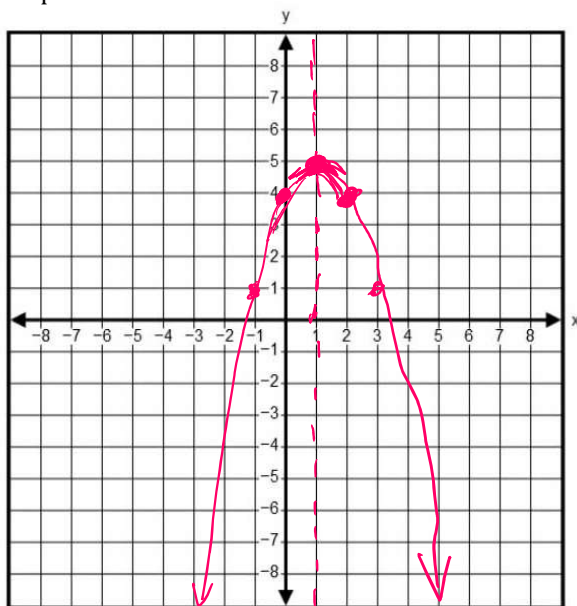
$(0, 4)$

- d. Find another point.

$$f(-1) = -(-1)^2 + 2(-1) + 4 = -1 - 2 + 4 = 1$$

$(-1, 1)$

- e. Graph the function.



2. $x^2 = 49$

$$x = \pm 7$$

$$7 \text{ or } -7$$

① $6 < F$
② $\sqrt{\quad}$
③ $\times$ } = 0

3. $9f^2 + 12f = 0$

$$(3 \cdot 3 \cdot f \cdot f) + (3 \cdot 4 \cdot f) = 0$$

$$3f(3f + 4) = 0$$

$$3f = 0 \quad \text{or} \quad 3f + 4 = 0$$

$$\begin{array}{r} -4 \\ 3f = -4 \\ \hline f = -\frac{4}{3} \end{array}$$

$$\begin{array}{r} 9 \quad 12 \\ \frac{1}{3} 9 \quad \frac{1}{3} 12 \\ \hline 3 \quad 4 \end{array}$$

4. $n^2 + 8n = -15$

$$+15 \quad +15$$

$$n^2 + 8n + 15 = 0$$

$$(n+3)(n+5) = 0$$

$$n+3=0$$

$$n = -3$$

$$n+5=0$$

$$n = -5$$

$$\begin{array}{r} a \cdot c \\ 15 \\ \hline 3 \quad 5 \\ \hline b \\ 15 \\ \hline 1 \quad 15 \\ 3 \quad 5 \end{array}$$

5. $3r^2 - 16r - 7 = 5$

$$-5 \quad -5$$

$$3r^2 - 16r - 12 = 0$$

$$(3r^2 - 18r) + (2r - 12) = 0$$

$$3r(r-6) + 2(r-6) = 0$$

$$3r(r-6) + 2(r-6) = 0$$

$$(r-6)(3r+2) = 0$$

$$r-6=0$$

$$+6 \quad +6$$

$$r = 6$$

$$3r+2=0$$

$$-2 \quad -2$$

$$3r = -2$$

$$r = -\frac{2}{3}$$

$$\begin{array}{r} -36 \\ -18 \quad 2 \\ \hline -16 \end{array}$$