

$$b) f(x) = (x + 5)(x - 9)$$

Zeros:

$$\underline{\quad} + \underline{\quad} = 0 \text{ and } \underline{\quad} - \underline{\quad} = 0$$

$$SS = \{-5, 9\}$$

$$\frac{9 + (-5)}{2} = 2$$

Axis of symmetry: $x = \underline{\quad}$

Minimum:

$$f(\underline{\quad}) = (\underline{\quad} + 5)(\underline{\quad} - 9)$$

$$y = (-49)$$

Axis of symmetry: $x = \underline{\quad}$

Maximum:

$$f(\underline{\quad}) = (2\underline{\quad} + 3)(8 - \underline{\quad})$$

$$y = 24$$

Axis of symmetry: $x = \underline{\quad}$

Minimum:

$$f(\underline{\quad}) = \underline{\quad}$$

$$c) f(x) = (2x + 3)(8 - x)$$

Zeros:

$$\underline{\quad} + \underline{\quad} = 0 \text{ and } \underline{\quad} - \underline{\quad} = 0$$

$$SS = \{-\frac{3}{2}, 8\}$$

$$\frac{-\frac{3}{2} + 8}{2} = \frac{13}{2}$$

Maximum:

$$f(\underline{\quad}) = (2\underline{\quad} + 3)(8 - \underline{\quad})$$

$$y = 24$$

Axis of symmetry: $x = \underline{\quad}$

Minimum:

$$f(\underline{\quad}) = \underline{\quad}$$

$$d) f(x) = x^2 + 7x + 10$$

$$\underline{\quad} = \underline{\quad}$$

Zeros:

$$\underline{\quad} = 0 \text{ and } \underline{\quad} = 0$$

$$\frac{13}{2} \times \frac{1}{2} = \frac{13}{4}$$

Minimum:

$$f(\underline{\quad}) = \underline{\quad}$$

d) $f(x) = x^2 + 7x + 10$

$y = (x+2)(x+5)$

Zeros:

$x+2 = 0$ and $x+5 = 0$

$SS = \{-2, -5\}$

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$\frac{(-2) + (-5)}{2} = -3.5$

Lesson 3.2: Relating the Standard and Factored Forms 53

Axis of symmetry: $x = -3.5$

Minimum:

$f(\underline{\hspace{1cm}}) = \underline{\hspace{1cm}}$

$y = (-1.5)(1.5)$

$y = -2.25$

vertex $(-3.5, -2.25)$

TURN

e) $f(x) = -x^2 + 25$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Zeros:

$\underline{\hspace{1cm}} = 0$ and $\underline{\hspace{1cm}} = 0$

Axis of symmetry: $x = \underline{\hspace{1cm}}$

Maximum:

$f(\underline{\hspace{1cm}}) = \underline{\hspace{1cm}}$



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e) $f(x) = -x^2 + 25$

Axis of symmetry: $x = \underline{\hspace{1cm}}$

Maximum:

Zeros:

$$\underline{+5} = 0 \text{ and } \underline{2-5} = 0$$

f) $f(x) = 4x^2 + 4x - 3$

[illegible]

Zeros:

 = 0 and = 0

Maximum: $f(x) = -0^2 + 25$

$$y = 25$$

vertex $(0, 25)$

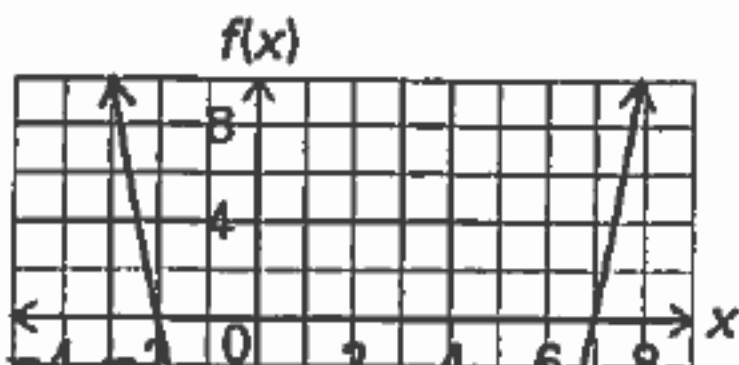
Axis of symmetry: $x = \underline{\hspace{2cm}}$

Minimum:

$$f(\underline{\quad}) = \underline{\hspace{10em}}$$

- 12. i) Use the graph of each quadratic function to find the zeros.**
- ii) Use the given point to write the factored form and standard form.**

a)



Factored form:

Standard form:

$$f(x) = a(x - \underline{\hspace{1cm}})(x - \underline{\hspace{1cm}}) \quad f(x) = \underline{\hspace{2cm}}$$

$$\frac{1}{2} \left(\frac{1}{2} \right) = \frac{1}{4}$$

f) $f(x) = 4x^2 + 4x - 3$

Axis of symmetry: $x = -\frac{1}{2}$

Zeros:

Minimum:

$f(-\frac{1}{2}) = 4(-\frac{1}{2})^2 + 4(-\frac{1}{2}) - 3$

$y = -6$ vertex $(-\frac{1}{2}, -6)$

$2x - 1 = 0$ and $2x + 3 = 0$

$\frac{2x}{2} = \frac{1}{2}$ or $2x + 3 = 0$

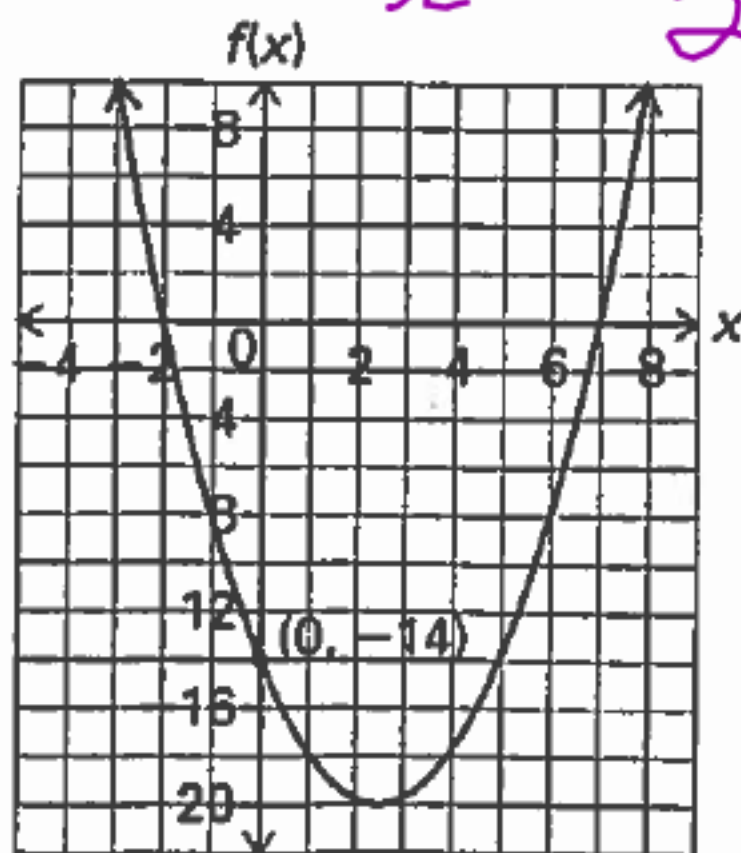
$x = \frac{1}{2}$

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

12. i) Use the graph of each quadratic function to find the zeros.

ii) Use the given point to write the factored form and standard form.

a)



Factored form:

Standard form:

$f(x) = a(x - \underline{\hspace{1cm}})(x - \underline{\hspace{1cm}})$ $f(x) = \underline{\hspace{2cm}}$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Solve for a:

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$\underline{\hspace{1cm}} = a(\underline{\hspace{1cm}})(\underline{\hspace{1cm}})$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Zeros:

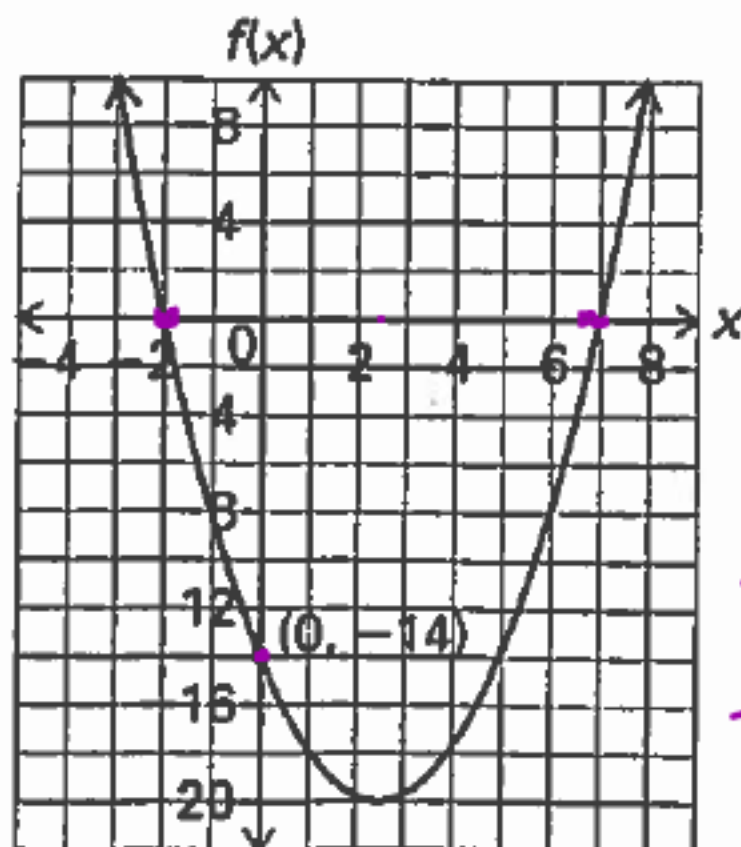
$x = \underline{\hspace{1cm}}$ and $x = \underline{\hspace{1cm}}$

12. i) Use the graph of each quadratic function to find the zeros.

$$y = 1(x+2)(x-7)$$

ii) Use the given point to write the factored form and standard form.

a)



Factored form:

$$f(x) = a(x - (-2))(x - 7)$$

$$y = a(x+2)(x-7)$$

Solve for a:

$$-20 = a(x+2)(x-7)$$

$$-20 = a(x^2 - 7x + 2x - 14)$$

$$-20 = a(x^2 - 5x - 14)$$

$$-20 = a(2.5^2 - 5(2.5) - 14)$$

$$f(x) = \frac{-20}{6.25 - 12.5 - 14}$$

$$-20 = a(-20.25)$$

$$\frac{-20}{-20.25} = \frac{-20.25}{-20.25}$$

$$a = 1$$

Standard form:

$$f(x) = (x+2)(x-7)$$

$$y = x^2 - 7x + 2x - 14$$

$$y = x^2 - 5x - 14$$

Zeros:

$$x = -2 \text{ and } x = 7$$

$$\text{vertex} = (2.5, -20)$$

$$(x, y)$$

$$-20.25$$