Ready, Set, Go!

Ready
Topic: Writing functions in vertex form.

Write each function in vertex form. Identify the vertex, axis of symmetry, direction of opening, and the domain and range of each function.

1. \( y = x^2 + 4x - 21 \)
   - Vertex Form: 
   - Vertex: 
   - Direction of Opening: 
   - Domain: 
   - Range: 
   - \textbf{Axis of Symmetry:} 
   - \textbf{Y-int:} 

2. \( y = (x + 7)(x + 9) \)
   - Vertex Form: 
   - Vertex: 
   - Direction of Opening: 
   - Domain: 
   - Range: 
   - \textbf{Axis of Symmetry:} 
   - \textbf{Y-int:} 

3. \( y = -(x - 15)(x + 3) \)
   - Vertex Form: 
   - Vertex: 
   - Direction of Opening: 
   - Domain: 
   - Range: 
   - \textbf{Axis of Symmetry:} 
   - \textbf{Y-int:} 
   - \textbf{X-int(s):} 

4. \( y = x^2 + 2x - 35 \)
   - Vertex Form: 
   - Vertex: 
   - Direction of Opening: 
   - Domain: 
   - Range: 
   - \textbf{Axis of Symmetry:} 
   - \textbf{Y-int:} 
   - \textbf{X-int(s):}
Set

Topic: Graphing and writing equations of quadratic functions

One form of a quadratic function is given. Fill in the missing forms.

<table>
<thead>
<tr>
<th>5. <strong>Standard form:</strong></th>
<th><strong>Vertex form:</strong></th>
<th><strong>Factored form:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>( y = (x + 5)(x - 3) )</td>
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</table>

**Table** (Show the vertex and at least 2 points on each side of the vertex.)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
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**Graph**

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<table>
<thead>
<tr>
<th>6. <strong>Standard form:</strong></th>
<th><strong>Vertex form:</strong></th>
<th><strong>Factored form:</strong></th>
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</thead>
<tbody>
<tr>
<td>( y = -3(x - 1)^2 + 4 )</td>
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**Table** (Show the vertex and at least 2 points on each side of the vertex.)

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**Graph**
7. **Standard form:**

\[ y = -x^2 + 10x - 25 \]

**Vertex form:**

**Factored form:**

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<td>( x )</td>
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(Show the vertex and at least 2 points on each side of the vertex.)

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8. **Standard form:**

**Vertex form:**

**Factored form:**

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(Show the vertex and at least 2 points on each side of the vertex.)
Go

Topic: Converting between three forms of quadratic functions.

Convert the given function into the indicated forms (standard, vertex, and/or factored forms).

9. \( y = x^2 + 12x - 64 \)  
   Factored Form:  
   Vertex Form:  

10. \( y = x^2 - 64 \)  
   Factored Form:  
   Vertex Form:  

11. \( y = 3x^2 + 24x + 49 \)  
   Vertex Form:  

12. \( y = 2x^2 - 12x + 23 \)  
   Vertex Form:  

13. \( y = 2(x + 8)(x - 2) \)  
   Standard Form:  
   Vertex Form:  

14. \( y = (x - 5)(x + 3) \)  
   Standard Form:  
   Vertex Form:  

15. \( y = (x + 2)^2 - 16 \)  
   Standard Form:  
   Factored Form:  

16. \( y = (x - 4)^2 - 81 \)  
   Standard Form:  
   Factored Form:  

Topic: Factoring quadratic expressions.

Factor the following quadratic expressions, if possible.

17. \( x^2 - 5x + 6 \)  
18. \( x^2 - 7x + 6 \)  
19. \( m^2 + 16m + 63 \)  

20. \( 2x^2 - 17x + 30 \)  
21. \( 12n^2 - 8n + 1 \)  
22. \( 3x^2 + 11x + 10 \)  

23. \( 36x^2 + 84x + 49 \)  
24. \( 64x^2 - 9 \)  
25. \( 25x^2 + 20x + 4 \)  