

**Practice 2.1.1****Remember to show your work!**

2-6. Solve each of the following equations using a method other than the Quadratic Formula.

a.  $y^2 - 6y = 0$

b.  $n^2 + 5n + 7 = 7$

c.  $2t^2 - 14t + 3 = 3$

d.  $\frac{1}{3}x^2 + 3x - 4 = -4$

Zero is a solution to each of the above equations. What do all of the above equations have in common that causes them to have zero as a solution?

2-7. Determine the vertex of each of the following parabolas by averaging the x-intercepts. Then write each function in graphing form.

a.  $y = (x - 3)(x - 11)$

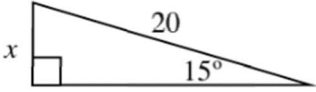
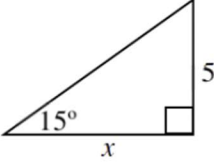
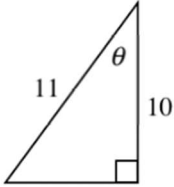
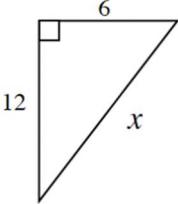
b.  $y = (x + 2)(x - 6)$

c.  $y = x^2 - 14x + 40$

d.  $y = (x - 2)^2 - 1$

2-8. Did you need to average the x-intercepts to write the vertex in part (d) of problem 2-7? How do the coordinates of the vertex relate to the equation in part (d)?

2-9. For each diagram below, write and solve an equation to calculate the value of the variable. If you need help, refer to the Math Notes box in this lesson. State your answer to part (d) in both approximate decimal form and radical form.

<p>a.</p>  <p>A right-angled triangle with a horizontal base and a vertical leg of length <math>x</math>. The hypotenuse is labeled 20. The angle at the bottom right vertex is <math>15^\circ</math>. A right angle symbol is at the bottom left vertex.</p>	<p>b.</p>  <p>A right-angled triangle with a horizontal base of length <math>x</math> and a vertical leg of length 5. The hypotenuse is unlabeled. The angle at the bottom left vertex is <math>15^\circ</math>. A right angle symbol is at the bottom right vertex.</p>
<p>c.</p>  <p>A right-angled triangle with a horizontal base and a vertical leg of length 10. The hypotenuse is labeled 11. The angle at the top vertex is <math>\theta</math>. A right angle symbol is at the bottom right vertex.</p>	<p>d.</p>  <p>A right-angled triangle with a horizontal top leg of length 6 and a vertical left leg of length 12. The hypotenuse is labeled <math>x</math>. The right angle is at the top left vertex.</p>

2-11. If  $10^{3x} = 10^{(x-8)}$ , solve for  $x$ . Be sure to check your answer.