

**Homework 1.2**

Given the function  $p(x) = (x-3)^2 - 4$ , find the indicated values below. Show your work.

<p>1. Find the value of <math>p(6)</math>.</p> $p(6) = [(6)-3]^2 - 4$ $= [3]^2 - 4$ $= 9 - 4$ $= 5$	<p>2. Find the value of <math>p(-1)</math>.</p> $p(-1) = [(-1)-3]^2 - 4$ $= [-4]^2 - 4$ $= 16 - 4$ $= 12$
<p>3. For what value(s) of <math>x</math> does <math>p(x) = 5</math>?</p> $(x-3)^2 - 4 = 5$ $\sqrt{(x-3)^2} = \sqrt{9}$ $x-3 = \pm 3$ $x = 3 \pm 3$ $x = 0, 6$	<p>4. For what value(s) of <math>x</math> does <math>p(x) = -4</math>?</p> $(x-3)^2 - 4 = -4$ $\sqrt{(x-3)^2} = \sqrt{0}$ $x-3 = 0$ $x = 3$

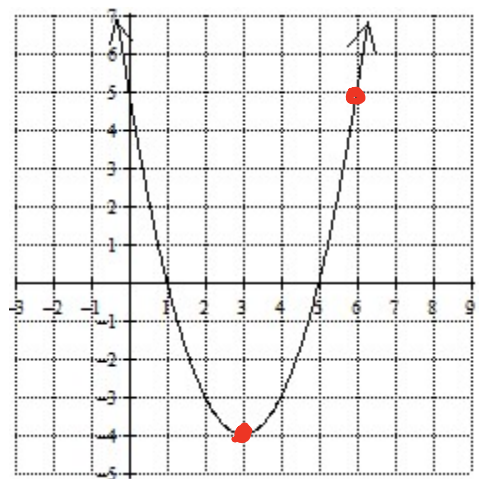
The graph of  $p(x) = (x-3)^2 - 4$  is pictured to the right. Use the graph to answer the questions below.

5. How does the graph verify your result to question #1 above?

$p(6) = 5$  means the point  $(6, 5)$  lies on the graph of  $p(x)$ , which does happen.

6. How does the graph verify your result to question #4 above?

If  $p(x) = -4$  when  $x = 3$ , then the point  $(3, -4)$  lies on the graph of  $p(x)$ , which does happen.



Answer each of the following questions and show all of your work. If necessary, leave your answers rounded to three decimal places.

<p>7. If <math>h(x) = -\sqrt{x-3} + 5</math>, then what is the value of <math>h(7)</math>? <math>h(7) = -\sqrt{(7)-3} + 5</math></p> $= -\sqrt{4} + 5$ $= -2 + 5$ $= 3$	<p>8. If <math>h(x) = -\sqrt{x-3} + 5</math>, then what is the value of <math>h(5)</math>? <math>h(5) = -\sqrt{(5)-3} + 5</math></p> $= -\sqrt{2} + 5$ $\approx 3.586$
<p>9. If <math>h(x) = -\sqrt{x-3} + 5</math>, then for what value(s) of <math>x</math> does <math>h(x) = 3</math>?</p> $-\sqrt{x-3} + 5 = 3$ $-\sqrt{x-3} = -2$ $(\sqrt{x-3})^2 = (-2)^2$ $x-3 = 4$ $x = 7$	<p>10. If <math>h(x) = -\sqrt{x-3} + 5</math>, then for what value(s) of <math>x</math> does <math>h(x) = 0</math>?</p> $-\sqrt{x-3} + 5 = 0$ $-\sqrt{x-3} = -5$ $(\sqrt{x-3})^2 = (-5)^2$ $x-3 = 25$ $x = 28$
<p>11. If <math>f(x) = 2 x-4  - 3</math>, then what is the value of <math>f(3)</math>? <math>f(3) = 2 (3)-4  - 3</math></p> $= 2 -1  - 3$ $= 2(1) - 3$ $= 2 - 3$ $f(3) = -1$	<p>12. If <math>f(x) = 2 x-4  - 3</math>, then what is the value of <math>f(-2)</math>? <math>f(-2) = 2 (-2)-4  - 3</math></p> $= 2 -4  - 3$ $= 2(4) - 3$ $= 8 - 3$ $f(-2) = 5$
<p>13. If <math>f(x) = 2 x-4  - 3</math>, then for what value(s) of <math>x</math> does <math>f(x) = -1</math>?</p> $2 x-4  - 3 = -1$ $2 x-4  = 2$ $ x-4  = 1$ $x-4 = \pm 1$ $x = 4 \pm 1$ $x = 3, 5$	<p>14. If <math>f(x) = 2 x-4  - 3</math>, then for what value(s) of <math>x</math> does <math>f(x) = 5</math>?</p> $2 x-4  - 3 = 5$ $2 x-4  = 8$ $ x-4  = 4$ $x-4 = \pm 4$ $x = 4 \pm 4$ $x = 0, 8$