Algebra 2 Bellwork Monday, April 11, 2016

1. $\sqrt{2k^2+17}-x=0$

If $k>0$ and $x=7$ in the equation above, what is the value of k?

A. 2
B. 3
C. 4
D. 5

2. Which of the following equations has a graph in the xy-plane for which y is always greater than or equal to –1?

A. $y=|x|-2$
B. $y=x^2-2$
C. $y=(x-2)^2$
D. $y=x^3-2$

3. If $\frac{x^{a^2}}{x^{b^2}}=x^{16}$, $x>1$, and $a+b=2$, what is thevalue of $a-b$?

A. 8
B. 14
C. 16
D. 18

4. Which of the follwing complex numbers is equivlalent to $\frac{3-5i}{8+2i}$? (Note: $i=\sqrt{-1}$)

A. $\frac{3}{8}-\frac{5i}{2}$
B. $\frac{3}{8}+\frac{5i}{2}$
C. $\frac{7}{34}-\frac{23i}{34}$
D. $\frac{7}{34}+\frac{23i}{34}$

5.

x	$f(x)$
0	3
2	1
4	0
5	–2

The function f is defined by a polynomial. Some values of x and $f(x)$ are shown above. Which of the following must be a factor of $f(x)$?

A. $x-2$
B. $x-3$
C. $x-4$
D. $x-5$

6. In the xy-plane, the parabola with equation $y=(x-11)^2$ intersects the line with equation $y=25$ at two points, A and B. What is the length of $\overline{AB}$?

A. 10
B. 12
C. 14
D. 16

ANSWERS

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1. $\sqrt{2k^2+17} - x = 0$

If $k > 0$ and $x = 7$ in the equation above, what is the value of k?

A. 2
B. 3
C. 4
D. 5

$\sqrt{2k^2+17} - 7 = 0$

$\left(\sqrt{2k^2+17}\right)^2 = (7)^2$

$2k^2+17 = 49$

$2k^2 = 32$

$k^2 = 16$

$k = \pm 4$

2. Which of the following equations has a graph in the xy-plane for which y is always greater than or equal to –1?

A. $y = |x| - 2$ → 2 down
B. $y = x^2 - 2$ → 2 down
C. $y = (x-2)^2$ → 2 R 1 U 4 T
D. $y = x^3 - 2$ → 2 down

3. If $\frac{x^{a^2}}{x^{b^2}} = x^{16}$, $x > 1$, and $a + b = 2$, what is thevalue of $a - b$?

A. 8
B. 14
C. 16
D. 18

$\frac{x^{a^2}}{x^{b^2}} = x^{16}$

$x^{a^2-b^2} = x^{16}$

$a^2 - b^2 = 16$

$(a+b)(a-b) = 16$

$2(a-b) = 16$

$a - b = 8$

4. Which of the follwing complex numbers is equivlalent to $\frac{3-5i}{8+2i}$? (Note: $i = \sqrt{-1}$)

A. $\frac{3}{8} - \frac{5i}{2}$
B. $\frac{3}{8} + \frac{5i}{2}$
C. $\frac{7}{34} - \frac{23i}{34}$
D. $\frac{7}{34} + \frac{23i}{34}$

$\frac{3-5i}{8+2i} \cdot \frac{8-2i}{8-2i}$

$64 - 4i^2$

$= \frac{14-46i}{68} = \frac{7-23i}{34}$

	3	$-5i$
8	24	$-40i$
$-2i$	$-6i$	$+10i^2$ -10

5.

x	$f(x)$
0	3
2	1
4	0
5	–2

4 is a zero

The function f is defined by a polynomial. Some values of x and $f(x)$ are shown above. Which of the following must be a factor of $f(x)$?

A. $x - 2$
B. $x - 3$
C. $x - 4$
D. $x - 5$

6. In the xy-plane, the parabola with equation $y = (x-11)^2$ intersects the line with equation $y = 25$ at two points, A and B. What is the length of $\overline{AB}$?

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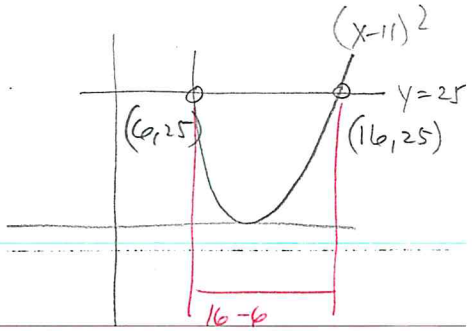

$\sqrt{25} = \sqrt{(x-11)^2}$

$\pm 5 = x - 11$

$x = 16, 6$