1.

x	0	2	4	5
$f(x)$	3	1	0	−2

The function $f(x)$ 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. $x - 5$

2. If $9b = 81$, then $\sqrt{b} \cdot \sqrt[3]{3b} =$

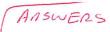A. 9
B. 27
C. 81
D. 243
E. 729

3. If the product of $(1 + 2), (2 + 3)$, and $(3 + 4)$ is equal to one-half the sum of 20 and x, what is the value of x?

A. 10
B. 85
C. 105
D. 190
E. 1210

4. A certain researcher found that the number of bacteria in a sample doubles every hour. If there were 6 bacteria at the start, how many are there after 9 hours?

A. 54
B. 512
C. 1536
D. 3072
E. 6144

5. A bakery uses a special flour mixture that contains corn, wheat, rye in the ratio 3 : 5 : 2. If a bag of the mixture contains 5 pounds of rye how many pounds of wheat does it contain?

A. 2
B. 5
C. 7.5
D. 10
E. 12.5

6. If $a^2 b = 12^2$, and b is an odd integer, then a could be divisible by all fo the following EXCEPT:

A. 3
B. 4
C. 6
D. 9
E. 12

1

1.

x	0	2	4	5
$f(x)$	3	1	0	-2

The function $f(x)$ 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. $x - 4$ ⟵ (circled)
D. $x - 5$

4 is a zero of this function since it makes $y = 0$.

therefore, $x - 4$ must be a factor

2. If $9b = 81$, then $\sqrt{b} \cdot \sqrt[3]{3b} =$

$b = 9$

A. 9 (circled)
B. 27
C. 81
D. 243
E. 729

$= \sqrt{9} \cdot \sqrt[3]{3 \cdot 9}$
$= \sqrt{9} \cdot \sqrt[3]{27}$
$= 3 \cdot 3$
$= 9$

3. If the product of $(1 + 2), (2 + 3)$, and $(3 + 4)$ is equal to one-half the sum of 20 and x, what is the value of x?
A. 10
B. 85
C. 105
D. 190 (circled)
E. 1210

$(3)(5)(7) = \frac{1}{2}(20 + x)$
$105 = 10 + \frac{1}{2}x$
$95 = \frac{1}{2}x$
$x = 190$

4. A certain researcher found that the number of bacteria in a sample doubles every hour. If there were 6 bacteria at the start, how many are there after 9 hours?
A. 54
B. 512
C. 1536
D. 3072 (circled)
E. 6144

$y = 6(2)^x$ $x = 9$
$= 6(2)^9$
$= 3072$

5. A bakery uses a special flour mixture that contains corn, wheat, rye in the ratio $3 : 5 : 2$. If a bag of the mixture contains 5 pounds of rye how many pounds of wheat does it contain?
A. 2
B. 5
C. 7.5
D. 10
E. 12.5 (circled)

corn wheat rye
$3 : 5 : 2$

$\dfrac{\text{wheat}}{\text{rye}} \quad \dfrac{5}{2} = \dfrac{x}{5\,lbs}$

$x = 12.5\,lbs$

6. If $a^2 b = 12^2$, and b is an odd integer, then a could be divisible by all fo the following EXCEPT:
A. 3
B. 4
C. 6
D. 9 (circled)
E. 12

$a^2 b = 12^2$
$a^2 b = 144$

$1 \cdot 144$
$3 \cdot 48$
$9 \cdot 16$

these are the only factors of 144 with an odd factor.

$a^2 = 144$ or $a^2 = 48$ or $a^2 = 16$
$a = 12$ $a = 4$ 1

48 is not a perfect sq.

9 is not a factor of either of these