

1.

If $\frac{2x-7}{5} = k$ and $k = 7$, what is the value of x ?

- A) 84
- B) 24
- C) 42
- D) 21

2.

for $i = \sqrt{-1}$, what is the sum of $(7 - 2i) - (2 + 3i)$?

- A) $9 - 5i$
- B) $9 + i$
- C) $5 - 5i$
- D) $5 + i$

3.

$$(2xy^2 + zx^3 - 8zx^2) - (-2zx^3 + 3xy^2 - 2z4x^2)$$

Which of the following is equal to the expression above?

- A) $5xy^2 - zx^3 - 16zx^2$
- B) $-xy^2 - zx^3 - 16zx^2$
- C) $-xy^2 + 3zx^3$
- D) $xy^2 - 3zx^3$

4.

If $t < 0$, and if $2t^2 - 2 = 16$, what is the value of t ?

5.

If $y = nx$, and n is a constant which makes $y = 18$ when $x = 6$, what is the value of y when $x = 9$?

- A) 36
- B) 42
- C) 45
- D) 27



6.

If $15 + 6x = 17$ what is the value of $2 + 12x$?

- A) 8
- B) 4
- C) 6
- D) 10



7.

For what combinations of n is $|n - 4| + 2 = 7$

- A) 1,9
- B) 9,0
- C) -1,9
- D) -2,8



8.

A certain relationship is modeled by $y = \frac{8}{x-1}$
rewrite the equation as x in terms of y . ($x =$)

- A) $x = 8 + y$
- B) $x = \frac{8+y}{2}$
- C) $x = \frac{8+y}{2y}$
- D) $x = \frac{8+y}{y}$



9.

If $y = 4$ for the model in Question 8, what is the value of x ?

- A) 12
- B) $\frac{8}{3}$
- C) 3
- D) 6



10.

If $10x+3=1$, what is the value of $5x-4$?

- A) 3
- B) -3
- C) 5
- D) -5

11.

$$\begin{aligned}x + y &= 0 \\ 4x - 2y &= 20\end{aligned}$$

Which of the following ordered pairs (x, y) satisfies the system of equations above?

- A) (3, -2)
- B) (3, -3)
- C) (-4, 3)
- D) (-3, 3)

12.

$$4a^4 + 12a^2b^2 + 9b^4$$

Which of the following is equivalent to the expression shown above?

- A) $(2a^2 + 3b^2)^2$
- B) $(3a^2 + 2b^2)^4$
- C) $(4a^2 + 9b^2)^2$
- D) $(a^2 + 3b^3)^2$

13.

$$\sqrt{2k^2 + 14} - x = 0$$

If $k > 0$ and $x = 8$ in the equation above, what is the value of k ?

- A) 2
- B) 3
- C) 5
- D) 7

14.

$$3x(4x + 5) + 2(x - 4) = ax^2 + bx + c$$

In the equation above, a , b , and c are constants. If the equation is true for all values of x , what is the value of b ?

15.

A function g satisfies $g(2)=6$ and $g(4)=5$. A function x satisfies $x(2)=4$ and $x(4)=3$. What is the value of $g(x(2))$?

- A) 3
- B) 5
- C) 6
- D) 4



16.

If $3k + 7 = 25$, what is the value of $k^2 - k$?

- A) 3
- B) 42
- C) 30
- D) 49

17.

Which of the following is equal to $\sqrt[7]{5^3}$

- A) $5^{7/3}$
- B) 5^{21}
- C) $25^{1/7}$
- D) $5^{\frac{3}{7}}$

18.

If $\frac{6}{x} = \frac{7}{2+x}$ what is $\frac{72}{x}$?

- A) 12
- B) 7
- C) 14
- D) 6

19.

$$x^3(x^2 - 5) = -6x$$

What is one possible solution to the above equation?

20.

If $1 + \frac{2}{3}x + \frac{8}{3}x = \frac{17}{8} - \frac{1}{8}$, what is the value of x ?

21.

a)

x	-1	0	1	2
f(x)	-4	2	8	14

- A) $f(x) = x + 3$
 B) $f(x) = 2x + 6$
 C) $f(x) = 4x + 1$
 D) $f(x) = 6x + 2$

b)

x	2	3	5	7
g(x)	-1	1	5	9

Given the function above, what is the y-intercept of $g(x)$?

- A) $y = -5$
 B) $y = 2.5$
 C) $y = -3$
 D) $y = -7$



22. a)

$$\begin{array}{l} 6x^2 + 3x - 2 \\ 2x^2 - 8x - 4 \end{array}$$

Which of the following is the sum of the two polynomials shown above?

- A) $8x^2 - 5x - 6$
 B) $8x^2 + 5x + 6$
 C) $8x^4 - 5x^2 - 6$
 D) $8x^4 + 5x^2 + 6$

b)

$$\begin{array}{l} -4x^3 + 2x^5 - x^2 + 5 \\ -3x^5 + 4x^4 + 7x^2 \end{array}$$

What is the sum of the two polynomials above?

- A) $-7x^8 + 6x^9 + 6x^2 + 5$
 B) $5x^5 + 6x^2 - 4x^3 + 4x^4 + 5$
 C) $-1x^5 - 4x^4 - 4x^3 + 5$
 D) $-1x^5 + 4x^4 - 4x^3 + 6x^2 + 5$



23.

If $(\frac{7}{3})a = \frac{3}{5}$, what is the value of a?

- A) $\frac{7}{5}$
 B) $\frac{5}{7}$
 C) $\frac{9}{35}$
 D) $\frac{35}{9}$



24.

$$(6x^2 + 10x - 4) - 8(2x^2 + 3x + 5)$$

If the above expression is rewritten in the form $ax^2 + bx + c$, where a , b , and c are constants, what is the value of b ?



25.

Which of the following expressions is equal to 0 for some value of a ?

A) $|a - 2| - 2$

B) $|a + 2| + 2$

C) $|2 - a| + 2$

D) $|a - 2| + 2$

26.

$$f(x) = 4x + y$$

In the function above, y is a constant. If $f(2) = 11$, what is the value of $f(-3)$?

A) -9

B) -3

C) 9

D) -12

27.

$$3(y + 3)$$

$$\frac{y}{x} = 2$$

If (x, y) is the solution to the system of equations above, what is the value of y ?

A) 5

B) 2

C) 3

D) 6

28.

If $f(x) = -3x^2 + x - 4$, what is $f(2x)$ equal to?

A) $12x + 2x - 4$

B) $12x^2 - 2x - 4$

C) $-12x^2 - 2x - 4$

D) $-12x^2 + 2x - 4$

29.

$$6(x+3)(3x-9)$$

Which of the following is equivalent to the expression above?

A) $24x + 72$

B) $18x^2 + 162$

C) $3x^2 - 27$

D) $18x^2 - 27$

Test 1 No Calc

Which of the following is not a solution to the inequality $6x - 4 \geq 4x - 3$?

- A) 1
- B) -1
- C) 2
- D) 3

$$j = \frac{\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}}{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{15}\right)^x} z$$

The above equation is completely made up
And represents absolutely nothing.

Which of the following gives z in terms of j, x, and y?

$$\text{A) } z = \frac{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{3y}{4x}\right)^{2x}}{\left(\frac{2x}{3y-200}\right)\left(\frac{2x}{15}\right)^x} j$$

$$\text{B) } z = \frac{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{15}\right)^x}{\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$$

$$\text{C) } z = \frac{\left(\frac{y}{1200}\right)^{y-1}}{\left(\frac{2x}{15}\right)^x \left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$$

$$\text{D) } z = \frac{\left(\frac{2x}{15}\right)^x}{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$$

Test 2 WC

Question 10

A function g satisfies $g(2)=6$ and $g(4)=5$. A function x satisfies $x(2)=4$ and $x(4)=3$. What is the value of $g(x(2))$?

- A) 3
- B) 5
- C) 6
- D) 4

Written by Nicole D'Onofrio

Question 4 A

x	-1	0	1	2
$f(x)$	-4	2	8	14

- A) $f(x) = x + 3$
- B) $f(x) = 2x + 6$
- C) $f(x) = 4x + 1$
- D) $f(x) = 6x + 2$

Written by Nicole D'Onofrio

Question 4 B

x	2	3	5	7
$g(x)$	-1	1	5	9

Given the function above, what is the y-intercept of $g(x)$?

- A) $y = -5$
- B) $y = 2.5$
- C) $y = -3$
- D) $y = -7$

Question 6 A

$$6x^2 + 3x - 2$$
$$2x^2 - 8x - 4$$

Which of the following is the sum of the two polynomials shown above?

- A) $8x^2 - 5x - 6$
- B) $8x^2 + 5x + 6$
- C) $8x^4 - 5x^2 - 6$
- D) $8x^4 + 5x^2 + 6$

Question 6 B

$$-4x^3 + 2x^5 - x^2 + 5$$
$$-3x^5 + 4x^4 + 7x^2$$

What is the sum of the two polynomials above?

- A) $-7x^8 + 6x^9 + 6x^2 + 5$
- B) $5x^5 + 6x^2 - 4x^3 + 4x^4 + 5$
- C) $-1x^5 - 4x^4 - 4x^3 + 5$
- D) $-1x^5 + 4x^4 - 4x^3 + 6x^2 + 5$

Question 7

If $(7/3)a = 3/5$, what is the value of a ?

- A) $7/5$
- B) $5/7$
- C) $9/35$
- D) $35/9$

Question 33

$$(6x^2 + 10x - 4) - 8(2x^2 + 3x + 5)$$

If the above expression is rewritten in the form $ax^2 + bx + c$, where a , b , and c are constants, what is the value of b ?

Question 1

If $10x+3=1$, what is the value of $5x-4$?

- A) 3
- B) -3
- C) 5
- D) -5

Written by Nicole D'Onofrio

Question 2

$$\begin{aligned}x + y &= 0 \\ 4x - 2y &= 20\end{aligned}$$

Which of the following ordered pairs (x, y) satisfies the system of equations above?

- A) (3, -2)
- B) (3, -3)
- C) (-4, 3)
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Question 4

$$4a^4 + 12a^2b^2 + 9b^4$$

Which of the following is equivalent to the expression shown above?

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- C) $(4a^2 + 9b^2)^2$
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Question 5

$$\sqrt{2k^2 + 14} - x = 0$$

If $k > 0$ and $x = 8$ in the equation above, what is the value of k ?

- A) 2
- B) 3
- C) 5
- D) 7

Written by Tracy Nguyen

$$3x(4x + 5) + 2(x - 4) = ax^2 + bx + c$$

In the equation above, a , b , and c are constants. If the equation is true for all values of x , what is the value of b ?

Test 3 NC

Question 2

If $3k + 7 = 25$, what is the value of $k^2 - k$?

- A) 3
- B) 42
- C) 30
- D) 49

Question 3

Which of the following is equal to $\sqrt[7]{5^3}$?

- A) $5^{7/3}$
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Question 5

If $\frac{6}{x} = \frac{7}{2+x}$ what is $\frac{72}{x}$?

- A) 12
- B) 7
- C) 14
- D) 6

Question 16

$$x^3(x^2 - 5) = -6x$$

What is one possible solution to the above equation?

Written by Maria Shaia

Question 17

If $1 + \frac{2}{3}x + \frac{8}{3}x = \frac{17}{8} - \frac{1}{8}$, what is the value of x ?

Written by Nicole D'Onofrio

Test 4 NC

Question 1

Which of the following expressions is equal to 0 for some value of a ?

- A) $|a - 2| - 2$
- B) $|a + 2| + 2$
- C) $|2 - a| + 2$
- D) $|a - 2| + 2$

Question 2

$$f(x) = 4x + y$$

In the function above, y is a constant. If $f(2) = 11$, what is the value of $f(-3)$?

- A) -9
- B) -3
- C) 9
- D) -12

Question 3

$$3(y + 3)$$

$$\frac{y}{x} = 2$$

If (x,y) is the solution to the system of equations above, what is the value of y ?

- A) 5
- B) 2
- C) 3
- D) 6

Question 4

If $f(x) = -3x^2 + x - 4$, what is $f(2x)$ equal to?

- A) $12x + 2x - 4$
- B) $12x^2 - 2x - 4$
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Question 5

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- D) $18x^2 - 27$