

**Test Two: Math, No Calculator**  
**Additional Problems**

Once you have read through the test marked Test Two: Math, No Calculator and understand the solutions, complete the following practice test to reinforce what you have just learned. Good luck!

**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)
- D) (-3, 3)

**Question 3**

A car transportation service uses the following formula to calculate the cost of each ride:  $12 + .45M$ .  $M$  represents the number of minutes the driver travels for. Which of the following most accurately describes the meaning of .45 in the given formula?

- A) The starting cost of .45 cents per service
- B) The maximum charge of .45 cents per customer
- C) The flat rate of 45 dollars per service
- D) The additional .45 charge per minute the driver travels for

Written by Nicole D'Onofrio

**Question 4**

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

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)  $(a^2 + 3b^3)^2$

**Question 5**

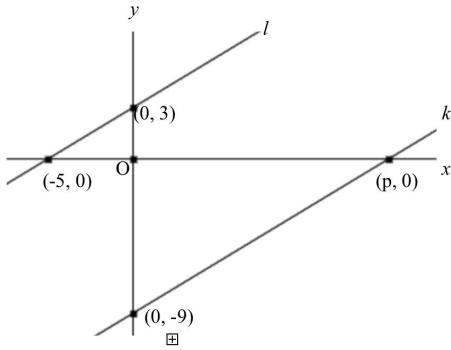
$$\sqrt{2k^2 + 14} - x = 0$$

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

**Question 6**



In the  $xy$ -plane above, line  $l$  is parallel to line  $k$ .  
What is the value of  $p$ ?

- A) 9
- B) 10
- C) 12
- D) 15

Written by Tracy Nguyen

**Question 7**

If  $\frac{x^a}{x^b} = x^{18}$ ,  $x > 1$ , and  $a + b = 3$ , what is the value

of  $a - b$ ?

- A) 6
- B) 12
- C) 16
- D) 18

Written by Tracy Nguyen

**Question 8**

$$nA = 360$$

The measure  $A$ , in degrees, of an exterior angle of a regular polygon is related to the number of sides,  $n$ , of the polygon by the formula above. If the measure of an exterior angle of a regular polygon is greater than  $70^\circ$ , what is the greatest number of sides it can have?

- A) 4
- B) 5
- C) 6
- D) 7

Written by Tracy Nguyen

**Question 9**

The graph of a line in the  $xy$ -plane has slope 3 and contains the point  $(1, 2)$ . The graph of a second line passes through the points  $(1, -1)$  and  $(2, 1)$ . If the two lines intersect at the point  $(a, b)$ , what is the value of  $a + b$ ?

- A) -9
- B) -4
- C) 1
- D) 3

Written by Tracy Nguyen

**Question 10**

Which of the following equations has a graph in the  $xy$ -plane for which  $y$  is always greater than  $-2$  ?

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

**Question 11**

Which of the following complex numbers is

equivalent to  $\frac{2-2i}{9+3i}$  ? (Note:  $i = \sqrt{-1}$ )

- A)  $\frac{2}{9} - \frac{2i}{3}$
- B)  $\frac{2}{9} + \frac{2i}{3}$
- C)  $\frac{2}{15} - \frac{4i}{15}$
- D)  $\frac{2}{15} + \frac{4i}{15}$

Written by Tracy Nguyen

**Question 12**

$$L = \frac{T+I+F}{N}$$

A company uses the above formula to calculate their average monthly web traffic on social media outlets. T, I, and F represent various social media outlets the company utilizes. N represents the total number of social media outlets the company uses. Which of the following expresses the average web traffic for site F?

- A)  $(LN) + I$
- B)  $T+I+F$
- C)  $(LN) - (T+I)$
- D)  $LN - T$

Written by Nicole D'Onofrio

**Question 13**

What is the sum of all values of  $m$  that satisfy  $3m^2 - 12m + 12 = 0$  ?

- A) -4
- B)  $-2\sqrt{3}$
- C)  $2\sqrt{3}$
- D) 4

Written by Tracy Nguyen

**Question 14**

The value of a piece of equipment depreciates at an annual rate of 18%. If the initial value of the equipment is 18,450, which of the following functions  $f$  represents the value, in dollars, of the equipment after  $t$  years have passed?

- A)  $f(t) = 18,450(.82)^t$
- B)  $f(t) = 18,450(.18)^t$
- C)  $f(t) = 18,468(.82)^t$
- D)  $f(t) = 18,468(.18)^t$

Written by Nicole D'Onofrio

**Question 15**

The expression  $\frac{6x-4}{x+2}$  is equivalent to which of the following?

- A)  $\frac{6-4}{2}$
- B)  $6-\frac{4}{2}$
- C)  $6-\frac{4}{x+2}$
- D)  $6-\frac{16}{x+2}$

Written by Tracy Nguyen

**Question 16**

The sales manager of a company awarded a total of \$2250 in bonuses to the most productive salespeople. The bonuses were awarded in amounts of \$150 or \$450. If at least one \$150 bonus and at least one \$450 bonus were awarded, what is one possible number of \$150 bonuses awarded?

Written by Tracy Nguyen

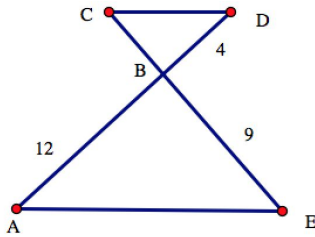
**Question 17**

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

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  $b$ ?

Written by Tracy Nguyen

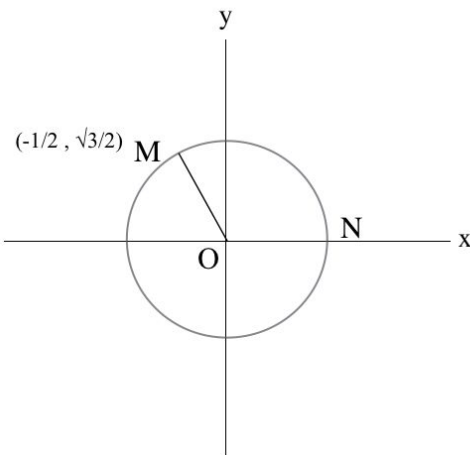
Question 18



18. In the figure above,  $\overline{AE} \parallel \overline{CD}$  and segment  $AD$  intersects segment  $CE$  at  $B$ . What is the length of segment  $CE$ ?

Written by Elise Favia

Question 19



In the  $xy$ -plane above,  $O$  is the center of the circle, and the measure of angle  $MON$  is  $2\pi/a$  radians. What is the value of  $a$ ?

Question 20

$$ax + by = 7$$

$$3x + 10y = 84$$

In the system of equations above,  $a$  and  $b$  are constants. If the system has infinitely many solutions, what is the value of  $\frac{a}{b}$  ?

Written by Jieyi (Crystal) Ding

*Great work! Click on the "Additional Problems Key" to score your test. Then redo the problems that you scored incorrectly.*