Exercise Set 3 (No Calculator)

1

If $x^3 - 7x^2 + 16x - 12 = (x - a)(x - b)(x - c)$ for all values of x, what is the value of abc?

2

If $x^3 - 7x^2 + 16x - 12 = (x - a)(x - b)(x - c)$ for all values of x, what is the value of $a + b + c$?

3

1. If $x^3 - 7x^2 + 16x - 12 = (x - a)(x - b)(x - c)$ for all values of x, what is the value of $ab + bc + ac$?

4

If $x^2 - ax + 12$ has a zero at $x = 3$, what is the value of a?

5

If $x^2 - ax + 12$ has a zero at $x = 3$, at what other value of x does it have a zero?

6

$$y = 4x^2 + 2$$
$$x + y = 16$$

When the two equations in the system above are graphed in the xy-plane, they intersect in the point (a, b). If $a > 0$, what is the value of a?

7

$$x^2 + y^2 = 9$$

Which of the following equations, if graphed in the xy-plane, would intersect the graph of the equation above in exactly one point?

A) $y = -4$
B) $y = -3$
C) $y = -1$
E) $y = 0$

8

If $g(x) = a(x + 1)(x - 2)(x - 3)$ where a is a negative constant, which of the following is greatest?

A) $g(0.5)$
B) $g(1.5)$
C) $g(2.5)$
D) $g(3.5)$

9

If $2x^2 + ax + b$ has zeros at $x = 5$ and $x = -1$, what is the value of $a + b$?

A) -18
B) -9
C) -2
D) -1

10

If the graph of the equation $y = ax^4 + bx$ in the xy-plane passes through the points $(2, 12)$ and $(-2, 4)$, what is the value of $a + b$?

A) 0.5 B) 1.5 C) 2.0
D) 2.5

11

If the function $y = 3(x^2 + 1)(x^3 - 1)(x + 2)$ is graphed in the xy-plane, in how many distinct points will it intersect the x-axis?

A) Two B) Three C) Four
D) Five