**Exercises - Polynomial Functions and Their Graphs**

**1**

The graph of $f(x) = ax^3 + x^2 - 18x - 9$ intersects the $x$-axis at $(3,0)$. What is the value of $a$?

A) $-1$

B) $0$

C) $1$

D) $2$

**2**

In the $xy$-plane, the graph of function $f$ has $x$-intercepts at $-7$, $-5$, and $5$. Which of the following could define $f$?

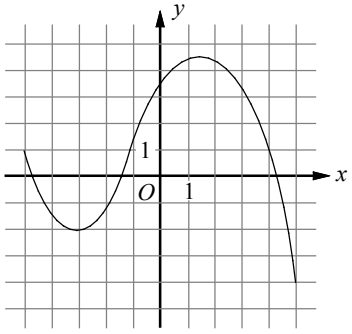
A) $f(x) = (x-7)(x^2-25)$

B) $f(x) = (x-7)(x^2+25)$

C) $f(x) = (x+7)(x^2-25)$

D) $f(x) = (x+7)(x^2+25)$

**3**




What is the minimum value of the function graphed on the $xy$-plane above, for $-5 \le x \le 5$?

A) $-4$

B) $-3$

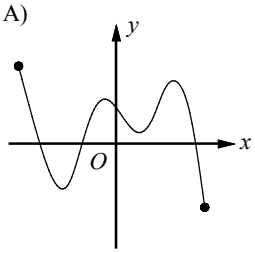
C) $-2$

D) $-\infty$

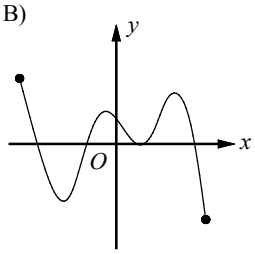
**4**

If function $f$ has four distinct zeros, which of the following could represent the complete graph of $f$ in the $xy$-plane?

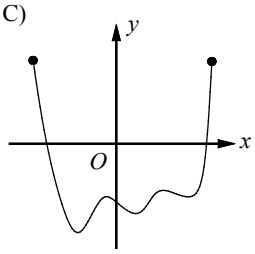
A)



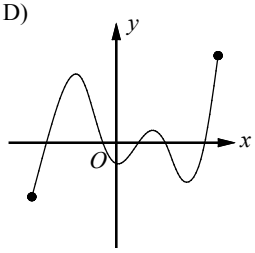

B)



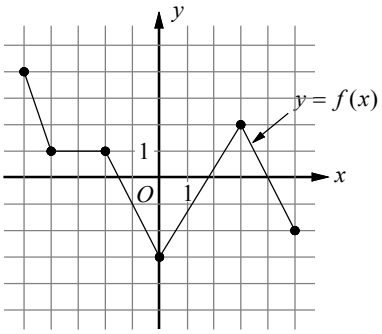

C)




D)




**5**




The complete graph of function $f$ is shown on the $xy$-plane above, for $-5 \le x \le 5$. Which of the following is/are true?

I. $f$ is strictly decreasing for $-5 < x < 0$.

II. $f(-3) = 1$

III. $f$ is minimum at $x = 5$.

A) I only

B) II only

C) III only

D) I and II only