3.5

Complex Zeroes and Fundamental Th^m of Algebra

1) If -1 is a **zero** of multiplicity 2 of $P(x) = x^4 + 6x^3 + 14x^2 + 14x + k$ for some constant k, then the remaining zeros are

A) $-2 \pm i$

B) $-2 \pm 2i$

C) $2 \pm i\sqrt{5}$

D) $2 \pm i$

E) $-2 \pm i\sqrt{5}$

2) If $3i$ is a zero of the polynomial function $g(x) = 2x^4 - x^3 + 12x^2 - 9x - 54$, then the **product** of all **real zeros** of $g(x)$ is equal to

A) -3

B) $-\frac{1}{2}$

C) $\frac{3}{2}$

D) 9

E) -6

3) If $-i$ and i, where $i=\sqrt{-1}$, are zeros of the polynomial function $P(x)=x^4-2x^3+2x^2-2x+1$, then the number of x-intercepts of the graph of $P(x)$ is

(a) 1
(b) 0
(c) 2
(d) 3
(e) 4

4) If 3 is a zero of $f(x) = x^3 - x^2 - 4x - 6$, then the other zeros are

(a) $1 \pm i$
(b) $1 \pm 2i$
(c) $-1 \pm 2i$
(d) $2 \pm i$
(e) $-1 \pm i$

5) Given that $-2i$ is a zero of the polynomial $p(x) = 2x^4 - x^3 + 7x^2 - 4x - 4$ then the **sum** of the **real zeros** of $p(x)$ is:

A) $\frac{1}{2}$
B) 0
C) $-\frac{1}{2}$
D) $\frac{3}{2}$
E) $-\frac{3}{2}$

6) If $1+i$ is a zero of $P(x) = x^3 - x^2 - ix^2 - 9x + 9 + 9i$, then the product of the other zeros is

A) $9-9i$

B) $3-3i$

C) 2

D) $-3+3i$

E) -9