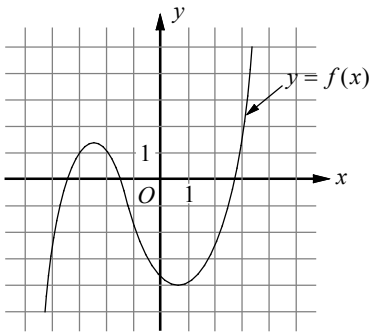
Chapter 13 Practice Test

1

If the graph of $f(x) = 2x^3 + bx^2 + 4x - 4$ intersects the x-axis at $(\frac{1}{2}, 0)$, and $(-2, k)$ lies on the graph of f, what is the value of k?

A) -4
B) -2
C) 0
D) 2

2



The function $y = f(x)$ is graphed on the xy-plane above. If k is a constant such that the equation $f(x) = k$ has one real solution, which of the following could be the value of k?

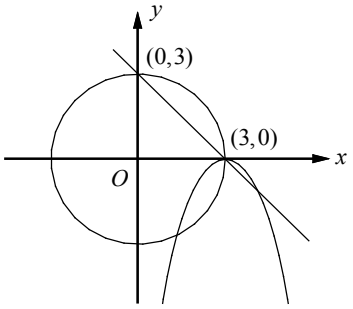
A) -3
B) -1
C) 1
D) 3

3

What is the value of a if $x + 2$ is a factor of $f(x) = -(x^3 + 3x^2) - 4(x - a)$?

A) -2
B) -1
C) 0
D) 1

4



$x^2 + y^2 = 9$
$y = -(x - 3)^2$
$x + y = 3$

A system of three equations and their graphs on the xy-plane are shown above. How many solutions does the system have?

A) 1
B) 2
C) 3
D) 4

5

Which of the following complex numbers is equivalent to $\frac{(1-i)^2}{1+i}$?

A) $-\frac{i}{2}-\frac{1}{2}$

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

C) $-i-1$

D) $-i+1$

6

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

A) $a^{\frac{2}{3}}$

B) $a^{\frac{4}{3}}$

C) $a^{\frac{5}{3}}$

D) $a^{\frac{7}{3}}$

7

$$p(x)=-2x^3+4x^2-10x$$
$$q(x)=x^2-2x+5$$

The polynomials $p(x)$ and $q(x)$ are defined above. Which of the following polynomials is divisible by $x-1$?

A) $f(x)=p(x)-\frac{1}{2}q(x)$

B) $g(x)=-\frac{1}{2}p(x)-q(x)$

C) $h(x)=-p(x)+\frac{1}{2}q(x)$

D) $k(x)=\frac{1}{2}p(x)+q(x)$

8

$$\sqrt{2x+6}=x+3$$

What is the solution set of the equation above?

A) $\{-3\}$

B) $\{-1\}$

C) $\{-3,2\}$

D) $\{-3,-1\}$

9

What is the remainder when polynomial $p(x)=24x^3-36x^2+14$ is divided by $x-\frac{1}{2}$?

A) 4

B) 6

C) 8

D) 10

10

The function f is defined by a polynomial. If $x+2$, $x+1$, and $x-1$ are factors of f, which of the following table could define f?

A)

x	$f(x)$
–2	4
–1	0
1	0
2	0

B)

x	$f(x)$
–2	0
–1	4
1	0
2	0

C)

x	$f(x)$
–2	0
–1	0
1	4
2	0

D)

x	$f(x)$
–2	0
–1	0
1	0
2	4