

**PreCalc BC      Review      Polynomials      Name:**

1. What is the remainder when  $3x^4 - 2x^3 - 20x^2 - 12$  is divided by  $x + 2$ ?

- a) 4    b) -28    c) -6    d) -36    e) -60

2. If the parabola  $ay^2 + by + c = x$  passes through the points  $(-4, 7)$ ,  $(5, 11)$ ,  $(8, 1)$ , the value of  $a + b + c$  equals

- a)  $17/43$     b)  $5/2$     c)  $14/27$   
d) 8    e) -11

3. A parabola with vertical axis has its vertex at the origin and passes through the point  $(7, 7)$ . The parabola intersect the line  $y=6$  at two points. The distance between these points is

- a) 14    b) 12    c) 13  
d) 8.6    e) 6.5

4. Using the rational root theorem, how many possible rational roots are there for  $2x^4 + 4x^3 - 6x^2 + 15x - 12 = 0$ ?

- a) 6    b) 8    c) 12    d) 14    e) 16

5. Let  $f(x)$  be a polynomial function:

$f(x) = x^5 + \dots$  If  $f(1) = 0$  and  $f(2) = 0$ , then  $f(x)$  is divisible by

- a)  $x-3$     b)  $x^2-2$     c)  $x^2+2$   
d)  $x^2-3x+2$     e)  $x^2+3x+2$

6. If  $ax^3 + bx^2 + cx + 3 = 0$  when  $x = -1$ , what is the value of  $ax^3 - bx^2 + cx + 3$  when  $x = 1$ ?

- a) -6    b) -3    c) 0    d) 3    e) 6

7. If  $f(x) = x^2 - 4$ , for what real values will  $f(f(x)) = 0$ ?

- a) 2.4    b)  $\pm 2.4$     c) 2 or 6  
d) no values    e)  $\pm 1.4$  or  $\pm 2.4$

8. If  $i$  is a root of  $x^4 + 2x^3 - 3x^2 + 2x - 4 = 0$ , the product of the real roots is

- a) 0    b) -2    c) 2    d) 4    e) -4

9. There are  $n$  integers in the solution set of  $x(x-2)(x+3)(x+5) < 0$ . Therefore  $n =$

- a) 2    b) 6    c) 4    d) 3    e) more than 6

10. If  $n$  is an integer, what is the remainder when  $3x^{2n+3} - 4x^{2n+2} + 5x^{2n+1} - 8$  is divided by  $x + 1$ ?

- a) -4    b) 10    c) 0    d) -20  
e) the remainder cannot be determined

11. If  $x - 7$  divides  $x^3 - 3k^3x^2 - 13x - 7$ , then  $k =$

- a) 1.34    b) 1.19    c) 5.04  
d) 4.63    e) 1.72

12. Which of the following is the solution set for  $x(x-3)(x+2) > 0$ ?

- a)  $x < -2$     b)  $-2 < x < 3$     c)  $-2 < x < 3$  or  $x > 3$   
d)  $x > -2$  or  $0 < x < 3$     e)  $-2 < x < 0$  or  $x > 3$

13. The function  $f(x) = 4x^3 - px^2 + qx - 2p$  crosses the  $x$ -axis at three points: 4, 7, and  $t$ . Find  $t$ .

- a) 0.73    b) 0.93    c) -0.79  
d) 0.64    e) 0.85