1) **D** f(x) is an even function. Therefore, f(-1)=12.

2) **C** Double root at -3 and a single root at 1.

3) **A **

4) **C** 

5) **D** y1 = 12; y2 = 2(4)2 – 8(4) + 12 = 12

Slope of line L = 

A vertical line is perpendicular to a horizontal line -->

slope is undefined.

6) **B** This is the latus rectum. 

7) **B** One of DeMorgan’s Rules.

8) **B** 

9) **D** The units digit for powers of 3 and 7 are periodic every 4 times.

3214578941 -->341 -->31 -->3

749000023125675 -->775 -->73 -->3

5x (x>0) always ends in 5

5 + 3 + 3 = 11

10) **D** Let DE = x, EC = 2x, BD = 3x



11) **C** 

12) **A** P(at least 1 “1”) = 1 – P(no 1’s)

 = 1 – 0.96

(Note : there is a 0.9 probability of not getting 1 for any one digit.)

13) **C** Let x = 201220112010

x2 – 2(x+4)2 + (x+8)2

x2 – 2(x2 + 8x + 16) + (x2 + 16x + 64)

x2 – 2x2 – 16x – 32 + x2 + 16x + 64 = 32

14) **E** log5x > 0, so x > 1

15) **C** 

16) **D** b2 – 4ac --> (-4)2 -4(3)(k) < 0 -->

16 – 2k < -16 --> 

17) **C** 

18) **C** x(x – 5)(x + 2) > 0

zeroes are 0, 5, -2

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 -2 0 5

19) **A** 

20) **B** Use Descartes’ Rule of Signs

P(x) has 99 sign reversals

P(-x) has 1 sign reversal

Therefore, there is a maximum of 100 real zeroes

21) **D **

22) **E (diverges)**

The sum of the odd numbered terms is

 

The ratio of the even numbered terms is  which

 makes the series diverge. Therefore, the whole

 series diverges.

23) **C** 

24) **B** 

25) **B** 33x • 22y = (2 • 32)12

 33x • 22y = 212 • 324

 3x = 24 2y = 12

 x = 8 y = 6

8 • 6 = 48

26) **B** x = 180(12 – 2) = 1800

 y = 360 ÷ 12 = 30

1800 + 30 = 1830

27) **D** M(x) = 0 --> x(x – 2)(x + 3) = 0

 M(x + 5) = (x + 5)(x + 3)(x + 8)

x = -5, -3, -8

28) **B **

determinant of cofA32 = -8 – 4 = -12



Changed to E at Convention

29) **C** We are looking for the upper bound. Use the Upper Bound Theorem and synthetic division to find where there are no sign reversals.

 2 3 -4 5 -3

 6 4 18

 3 2 9 15

Changed to E at Convention

30) **A** g(-3) = 3(-3)4 – k(-3)3 – 5(-3) + 12

 0 = 243 + 27k + 15 + 12

 -270 = 27k

 -10 = k