

Seminar 1

(Time allowed: 20 minutes)

1. $-3 \times 4 + (-2 \times -1) - 7 \times (-2) + 3 \times 8 =$
 - a) 10
 - b) 14
 - c) 24
 - d) 28

2. $3^3 \times 2^3 + 5^2 \times 5^2 + 5^0 - 5^{-1} =$
 - a) 841.8
 - b) 685
 - c) 840.8
 - d) 684.8

3. If $x = -3$ and $y = 2$, which of the following inequalities is correct?
 - a) $-y^2 > 2xy > x^3$
 - b) $2xy < -y^2 < x^3$
 - c) $2xy > x^3 > -y^2$
 - d) $x^3 < -y^2 < 2xy$

4. Two equations containing x and y are as follows:
$$3x - 2y = 30$$
$$4x + 3y = 57$$
The values of x and y are:
 - a) $x = -24,$ $y = 51$
 - b) $x = 12,$ $y = 3$
 - c) $x = 24,$ $y = 21$
 - d) $x = 44,$ $y = 51$

5. Three equations containing p, q and r are as follows:
$$p + 2q - r = 12$$
$$p + q + 2r = 5$$
$$3p - q + r = 4$$
The values of p and q are :
 - a) $p = 1/3,$ $q = 6$
 - b) $p = 3,$ $q = 1/4$
 - c) $p = 3,$ $q = 4$
 - d) $p = 1/3,$ $q = 4$

6. Given that $(x-8)(x-3) = 2 + 2x$, what are the roots of the equation?
 - a) $x = 11$ and $x = 2$
 - b) $x = -11$ and $x = 2$
 - c) $x = 6.5$ and $x = 4.5$
 - d) $x = 6.5$ and $x = -4.5$

Seminar 1 (cont.)

7. $3x^2 - 10x - 8$ can be factorised as:
- a) $(3x-2)(x+4)$
 - b) $(3x-4)(x-2)$
 - c) $(3x+2)(x-4)$
 - d) $(3x+4)(x-2)$
8. A company always makes exactly as many units of its product as it sells. Its fixed costs are \$5000 a year. In addition, it cost \$3 to make one units, and each unit sell for \$8.5. At what level of output and sales per year will the company break even (make neither a profit or a loss)?
- a) 588 units
 - b) 909 units
 - c) 1100 units
 - d) 1700 units
9. $3^{-6} / 3^{-2}$ equals to
- a) 1/6561
 - b) 1/81
 - c) 1/27
 - d) 9
10. A geometric progression has a 3rd term of 18 and a common ratio of 3. What is the sum of the first five terms of the progression?
- a) 90
 - b) 242
 - c) 726
 - d) 2178
11. Sales of product A in year 1 will be 6750 units. thereafter, sales volume will increase by 20% per annum. What will be the sales volume in year 12, to the nearest unit?
- a) 21600
 - b) 22950
 - c) 50153
 - d) 60184
12. If $y = 3x^2 + 8x - 7$, what values of x would give a value of y of 4?
- a) $x = -11$ and $x = 3$
 - b) $x = -3\frac{2}{3}$ and $x = 1$
 - c) $x = -3$ and $x = 1/3$
 - d) $x = -1$ and $x = 3\frac{2}{3}$