SUBSTITUTION

1. June 82
Calculate the value of V in the formula

$$V = \pi^2 \left(\frac{R - r^2}{2} \div (R + r) \right)$$

where $R = 22.8$, $r = 7.50$, $\pi = 3.14$ [7 marks]

2. G June 92
Given that $x = 2$, $y = -5$, and $z = 3$, find the value of

a. $x - 2y$

b. xz^2

c. $\frac{7x + 2z}{y}$ [5 marks]

3. G Dec 92
Given that $p = 2$, $q = -3$, and $r = -1$, find the value of

a. $5p - 2q$

b. $pq + pr$

c. pr^2 [5 marks]

4. Jun 94
Given that $a = 4$, $b = -2$, and $c = 3$, calculate the value of $\frac{a^2 - bc}{b + c}$ [2 marks]

5. Jun 97
Given that $m = -3$, $n = 2$, and $p = -1$, find the value of $\frac{m(p - n)^2}{3p + m}$ [4 marks]

6. Jan 00
If $l = -2$, $n = -3$, and $m = 4$, calculate the value of $\frac{m + nl}{n - m}$ [2 marks]

7. Jan 92
Given that a = 4, b = –3, and c = 12, calculate the value of $a^2(2b - c)$ [2 marks]

8. Jun 96
Given that $l = -2$, $m = 3$, and $n = 7$, calculate the value of $lm(m - n)$ [2 marks]

9. Jan 98
Find the value of p, if 3 is a root of

$5x^2 - px - 18 = 0$ [3 marks]

10. Jan 02
If $a = 4$, $b = -2$ and, $c = 3$, calculate the value of $\frac{a(a - b)}{bc}$ [2 marks]

11. June 03
Given that $a = 2$, $b = -3$, and $c = 0$, evaluate

i. $4a - 2b + 3c$

ii. a^c [3 marks]

12. Jan 04
If $p = 5$, $q = 0$, and $r = -3$, evaluate

i. $4p - qr$

ii. $2r^3$ [3 marks]

13. Jan 05
Given that $r = \frac{2p^2}{q - 3}$, calculate the value of r