Class Test 2

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Answer all questions. Show your working clearly.

1. Simplify the following fractions.

(a) $\dfrac{9m(m^2-n^2)}{24m^2+48mn+24n^2} \div 3m^2n$ [2]

(b) $\dfrac{6p^2q^2r-18p^3qr-24p^4r}{(5qr)^3} \times \dfrac{45pq^3+135q^4}{4p(2p+r)(p+q)^2} \times \dfrac{12p^2+2pr-2r^2}{27(p+3q)(q-4p)}$ [3]

2. Simplify the following expression.

$\dfrac{7mn^3}{2} + \dfrac{(3mn)^3}{18m^2(n-m)} \times \dfrac{(6n-6m)(2n-7m)}{2n+2m}$ [2]

3. In the following equations, make n the subject of the formula.

(a) $p = \dfrac{(q-n)(q+n)}{n^2-2}$ [1]

(b) $2z = y\sqrt{\dfrac{3x}{n}}$ [1]

4. Solve the following equation.

$\dfrac{x^2-1}{x} = 4 - \dfrac{8}{x+1}$ [3]

5. Ali cycles from town A to town B. The time he takes to complete the journey is given by the expression $t = \frac{4d+9}{2s} + \frac{27}{5+s}$, where d is the distance in km, s is the speed in km/h, and t is the time in hours.

(a) Find the time taken when $d = 10$ and $s = 7$. [1]

(b) Find an expression for d, in terms of s and t. [2]

(c) Find d when $s = 6$ and $t = 4\frac{1}{2}$. Express your answer in the form of a fraction. [1]

6. Given the formula $A = b^2 - \sqrt{\frac{2r+1}{bh}}$,

(a) find A when $b = 9$, $h = 4$ and $r = 40$, [1]

(b) make h the subject of the formula, [1]

(c) find h when $b = 5$, $r = 47$ and $A = 20$. [1]

7. Without using a calculator, and given that $y = 5100$, solve the expression $\frac{6y^2 + 17y - 3}{2y + 6}$. [2]

8. Simplify the following fractions.

(a) $\frac{9}{x} - \frac{2x}{3-x} + 3$ [2]

(b) $\frac{p^2}{p-q} + \frac{2p^2 - 5pq - 2q^2}{5p - 5q}$ [2]