National 5 Homework Solutions

Indices Due 12th March

1) $\frac{m^5}{m^3} = m^{5-3} = \underline{\underline{m^2}}$ (1)

2) $\frac{m^5}{m^8} = m^{5-8} = m^{-3} = \underline{\underline{\frac{1}{m^3}}}$ (2)

3) $p^3(p^2 - p^{-3}) = p^{3+2} - p^{3-3}$

$= p^5 - p^0$

$= \underline{\underline{p^5 - 1}}$ (2)

4) $\frac{3a^2 \times 2a}{a} = 3a \times 2 = \underline{\underline{6a}}$ (3)

5) $\frac{y^4 \times y}{y^{-2}} = \frac{y^{4+1}}{y^{-2}} = \frac{y^5}{y^{-2}}$

$= y^{5--2}$

$= \underline{\underline{y^7}}$ (2)

6) $16^{\frac{3}{4}} = \left(\sqrt[4]{16}\right)^3$

$= 2^3$

$= \underline{\underline{8}}$ (2)

7) $x^2y^4 \div x^{-3}y^6$

$= x^{2--3}\, y^{4--6}$

$= x^5y^{-2}$

$= \dfrac{x^5}{y^2}$ (2)

8) $k^8 \times (k^2)^{-3}$

$= k^8 \times k^{-6}$

$= k^{8+-6}$

$= k^2$ (2)

9) $a^{\frac{2}{3}}\left(a^{\frac{2}{3}} - a^{-\frac{2}{3}}\right)$

$= a^{\frac{2}{3}+\frac{2}{3}} - a^{-\frac{2}{3}+\frac{2}{3}}$

$= a^{\frac{4}{3}} - a^{0}$

$= a^{\frac{4}{3}} - 1$ (2)

10) $a^{\frac{1}{2}}\left(a + \frac{1}{a}\right)$

$= a^{\frac{1}{2}}\left(a^{1} + a^{-1}\right)$

$= a^{\frac{1}{2}+1} + a^{-1+\frac{1}{2}}$

$= a^{\frac{3}{2}} + a^{-\frac{1}{2}}$ (2)

Total: 20 marks