

HOMEWORK3

1. Write the value of each of the following.

$$\text{a) } (-3)^0$$

$$=1$$

$$\text{b) } (0.4)^0 + 2$$

$$=1+2$$

$$=3$$

$$\text{c) } (ab)^0 - (a^2)^0$$

$$=1-1$$

$$=0$$

$$\text{d) } 5^0 \times (0.4)^0$$

$$=1 \times 1$$

$$=1$$

$$\text{e) } 0 \times 4^0$$

$$=0 \times 1$$

$$=0$$

$$\text{f) } a^0 - 6$$

$$=1-6$$

$$=-5$$

$$\text{g) } 2y^4 \times 8y^0$$

$$=2y^4 \times 8 \times 1$$

$$=16y^4$$

$$\text{h) } 5x^0 - 3$$

$$=5 \times 1 - 3$$

$$=2$$

$$\text{i) } 6^0 \times 7^2$$

$$=1 \times 7^2$$

$$=7^2 = 49$$

$$\text{j) } a^2 + a^3 \times a$$

$$=a^{2+3+1}$$

$$=a^6$$

2. Rewrite the following with positive indices.

a) 7^{-1}

$$= \frac{1}{7^1}$$

$$= \frac{1}{7} \times 7$$

$$= \frac{1}{49}$$

b) 2^{-5}

$$= \frac{1}{2^5}$$

$$= \frac{1}{2} \times 32$$

$$= \frac{1}{64}$$

c) $8x^{-7}$

$$= 8 \times \frac{1}{x^7}$$

$$= \frac{8}{x^7}$$

d) $(2p)^{-3}$

$$= \frac{1}{(2p)^3}$$

$$= \frac{1}{8p^3}$$

e) $\frac{1}{3^{-4}}$

$$= 3^4 = 81$$

3. Change the following to negative index notation.

$$\text{a) } \frac{1}{6^4}$$

$$= \frac{1}{6 \times 6 \times 6 \times 6}$$

$$= \frac{1}{1296}$$

$$\text{b) } \frac{1}{2^3}$$

$$= \frac{1}{2 \times 2 \times 2}$$

$$= \frac{1}{8}$$

$$\text{c) } \frac{1}{3x^2}$$

$$= (3x^2)^{-1}$$

$$\text{d) } \frac{1}{a^4}$$

$$= a^{-4}$$

$$\text{e) } \frac{7}{a^2 b^5}$$

$$= \frac{7}{a^2 b^5}$$

$$\text{f) } \frac{3}{y^4}$$

$$= \frac{1}{\frac{3}{y^4}}$$

$$= 1 \div \frac{3}{y^4}$$

$$= 1 \times \frac{y^4}{3}$$

$$= \frac{y^4}{3}$$

4. Without using a calculator, find the value of each of the following.

a) 4^{-2}	$=\frac{1}{2} \times 16$	$=\frac{1}{\frac{12}{10^2}} = 1 \times \frac{1^2}{10^2}$
$=\frac{1}{4^2}$	$=32$	$=\frac{1^2}{10^2} = \frac{1}{100}$
$=\frac{1}{4} \times 16$	f) 6^{-3}	
$=\frac{1}{64}$	$=\frac{1}{6^3}$	
b) 5^{-2}	$=\frac{1}{6} \times 216$	j) $(\frac{3}{4})^{-2}$
$=\frac{1}{5^2}$	$=\frac{1}{1296}$	$=\frac{1}{(\frac{3}{4})^2}$
$=\frac{1}{5} \times 25$	g) $(\frac{2}{3})^{-3}$	$=\frac{1}{3^2} = 1 \times \frac{3^2}{4^2}$
$=\frac{1}{125}$	$=\frac{1}{(\frac{2}{3})^3}$	$=\frac{3^2}{4^2} = \frac{9}{16}$
c) 10^{-3}	$=\frac{1}{2^3} = 1 \times \frac{3^3}{2^3}$	k) $(\frac{1}{3})^{-3}$
$=\frac{1}{10^3}$	$=\frac{3^3}{2^3} = \frac{27}{8} = 3\frac{3}{8}$	$=\frac{1}{(\frac{1}{3})^3}$
$=\frac{1}{10} \times 1000$	h) $(\frac{1}{4})^{-2}$	$=\frac{1}{1^3} = 1 \times \frac{1^3}{3^3}$
$=\frac{1}{10000}$	$=\frac{1}{(\frac{1}{4})^2}$	$=\frac{1^3}{3^3} = \frac{1}{27}$
d) 7^{-1}	$=\frac{1}{1^2} = 1 \times \frac{1^2}{4^2}$	l) $(\frac{4}{5})^{-1}$
$=\frac{1}{7^1}$	$=\frac{1^2}{4^2} = \frac{1}{8}$	$=\frac{1}{(\frac{4}{5})^1}$
$=\frac{1}{7} \times 7$	i) $(\frac{1}{10})^{-2}$	$=\frac{1}{4^1} = 1 \times \frac{4^1}{5^1}$
$=\frac{1}{49}$	$=\frac{1}{(\frac{1}{10})^2}$	$=\frac{4^1}{5^1} = \frac{4}{5}$
e) 2^{-4}	$=\frac{1}{(\frac{1}{10})^2}$	
$=\frac{1}{2^4}$		